Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

Vol. 3. New York, August 26, 1848. No. 49.

THE
SCIENTIFIC AMERICAN:
CIRCULATION 11,000.
PUBLISHED WEEKLY.
128 Fulton Street, New York (Sun Building,) and 13 Court Street, Boston, Mass.
By Munn & Company.
The Principal Office being at New York.

TERMS---$2 a year---$1 in advance, and the remainder in 6 months.
☞See advertisement on last page.

Poetry.

THE HARP'S WILD NOTES.

BY ELIZA COOK.

A Zephyr breath of wind is playing
So softly none can trace its wings;
And lone and fitful in its straying,
It falls upon the silver strings.

They pour an answering strain that never
Could be awoke by minstrel skill;
The rarest melody that ever
Stirred from the chords to bless and thrill.

So rich, so full, so pure, so deep,
The air in dreamy sweetness floats;
But only spirit hands can sweep
Such music from the harp's wild notes.

So many a breast where music liveth,
May yield a store of measured tone;
Full many a burning lay it giveth,
Its rarest breathing still unknown.

The throb of strange and holy feeling,
The dearest joy, the saddest sigh,
Will fill the soul with high revealing
But, like the Harp Strain, it must die.

None can record the matchless theme
That with the mystic Wind kiss floats;
And none can learn the Poet's dream
That singeth in the Harp's wild notes.

HOME AND FRIENDS.

Oh, there's a power to make each hour
As sweet as heaven designed it;
Nor need we roam to bring it home,
Though few there be who find it!

We seek too high for things close by,
And lose what nature found us;
For life has here no charms so dear
As Home and Friends around us!

We oft destroy the present joy
For future hopes—and praise them:
Whilst flowers as sweet bloom at our feet,
If we'd but stoop to raise them!

For things afar still sweetest are,
When youth's bright spell hath bound us;
But soon we're taught that earth hath naught
Like Home and Friends around us!

The Friends that speed in time of need,
When Hope's last reed is shaken,
To show us still, that, come what will,
We are not quite forsaken:

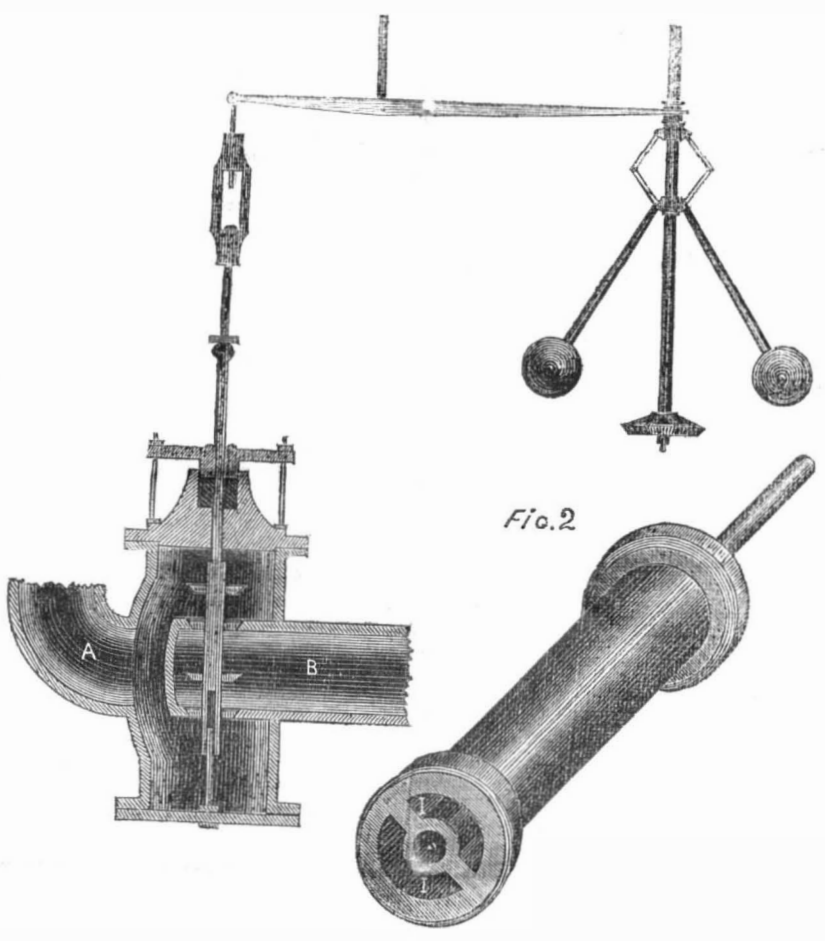
Though all were night—if but the light
From Friendship's altar crown'd us.
'Twould prove the bliss of earth was this—
Our Home and Friends around us!

The Weary at Rest.

No mother watch is keeping
O'er the pillow that I crave,
No fragrant breath is creeping
From the shadow of the grave;
No changing dream Elysian,
No glittering sense of light,
No sweet, delusive vision,
Wakes hollow, false delight;
That rest is in the valley,
Beneath the flowering sod,
When the soul to dust no ally,
Embosomed, sleeps in God.

HILL'S PATENT BALANCE VALVE.

Figure 1.



We introduce to our readers a new and useful improvement in a tubular balance valve, invented by Mr. William B. Hills, of Grand Rapids, Michigan, and for which he has secured letters patent. He has by this invention successfully applied the common double valve to regulate the motions of the steam engine in place of the common throstle valve. As the true value of any improvement is ascertained by experiment alone—we would remark that we have seen certificates of a very flattering character from engineers of steamboats in the West, and others, who had used it for a long time. One practical engineer who had tested its merits for nearly one year says, that "on an engine run at a high velocity I have fully satisfied myself that it is the best protective against breakages known, as it always maintains a steady, equal motion in the engine." A number of other practical men speak as highly of its advantages as the one whose opinions are here recorded. We cannot speak of its superiority from practical observation, but we can perceive how that it is held in equillibrio—balanced by the pressure of the steam—and how it can more easily be acted on by the governor than the old valve, nevertheless some may object and say it is not so simple, but more complex, and therefore in one point it is not so valuable.—We cannot thus decide upon inventions, although simplicity is the first thing to be looked at, but the most simple machines are not always the best, or there never would have been a compound machine constructed. The human eye is no less a perfect machine because it is made up of such an intricate mechanism of nerve and innumerable *lamina* of membrane. Simplicity, however, as we have said before, is a grand desideratum in machinery.

The above cuts represent a part of the invention and application, and a more minute explanation will be found on page 388, by the engravings on it, which explain the invention in its true language. Fig. 1, shows its construction and arrangement as a governing valve, and Fig. 2 its tubular form. A, is the steam pipe, and B, the pipe leading to the steam chest. I I, in Fig. 2, represents two pipes passing through the body of the valve to hold the same in equillibrio when the valve is lifted off its seat and subject to the most gentle action of the engine.

For Figures 3 *and* 4, *see Page* 388.

Attacked by Wild Bees.

A letter from Dr. Wilson of Bombay, dated April 1st, 1848, states that while he and Mr. Henderson, one of the Missionaries, were making researches into the natural history and antiquities of the adjoining island of Salsette, they were nearly stung to death by the wild bees. The Doctor, however, obtained some folds of a blanket, which he accidentally found within his pillows, which shielded him considerably from the wrath of these wild insects, until he obtained assistance from his friends. He was much reduced when they found him, but soon after recovered.

It is said that sliced cucumbers will banish cockroaches. This can easily be tried.

The Pork Trade of the West.

DeBow's Commercial Review for July, contains some interesting tables of the Pork trade of the Western States. The number of hogs slaughtered during the years 1847–'48 was 1,500,000,—an increase of nearly 50 per cent. over previous years. The number slaughtered in Cincinnati alone amounted to 575,000.

Only a small portion of this valuable product is exported; and four-fifths of that sent out of the country is to the British Colonies, South America and West Indies.

Professor Morse, the inventor of the electric telegraph, was married on the 10th inst. at Utica, N. Y. to Miss S. Griswold of New Orleans.

RAIL ROAD NEWS.

Ohio Railroads.

Two great chains of railroad are contemplated through Ohio, towards which decided measures have been taken. The first and most forward in its prospects is that leading from Cincinnati through Columbus, and then eastwardly till it touches the Ohio river, at some point there it can connect with a railroad to the seaboard. This road connects with the Cincinnati and Sandusky road, which is already in operation as far as Xenia or Springfield, and passes through Columbus and Newark to the mouth of Licking river. From this point, two routes present themselves, one to Wheeling through Zanesville, and the other in a northeastern direction till it strikes the river at Wellsville. The road for part of the distance, is in the hands of organized companies, who will carry on the work by local means, until they come to the point of divergence.

New London, Willimantic and Springfield Railroad.

Contracts have been made by the Directors for 40 miles of this road from New London—To enable the company to contract at present for cheap iron the directors have called upon the stockholders for monthly instalments on the subscriptions, at the rate of ten dollars per share until farther notice.

Shameful Railroad System.

By the American Railroad Journal, (which deserves great credit for the exposure,) we learn that it has been customary for the Camden and Amboy, New Jersey Railroad, to charge passengers from Philadelphia through, a distance of 90 miles, $4, while they only charge way passengers at the rate of $2,75. The sum of $2,75 is high enough charge for the whole route—it is much higher in proportion than the Boston and Albany Railroad, which pays very good interest. It seems that the company, too, has been very liberal to puffers and panegyrists, by free tickets, &c. having no less than about 600 *dead heads* to uphold. This may account for the $1,25 extra which the Philadelphians and Yorkers have to pay to square up the profits. Gentlemen who have travelled much between this city and Philadelphia, may consider themselves to have been highly honored for the liberal manner in which they have been made to contribute to this great Jersey Railroad.

Columbus and Cleveland Rail Road.

A meeting has been held in Cleveland, Ohio, $75,000 subscribed, and the Directors authorized to put the whole road under contract.

This is the way to act. The Pittsburgh western Road will intersect this work.

Disagreement at Niagara Falls Bridge.

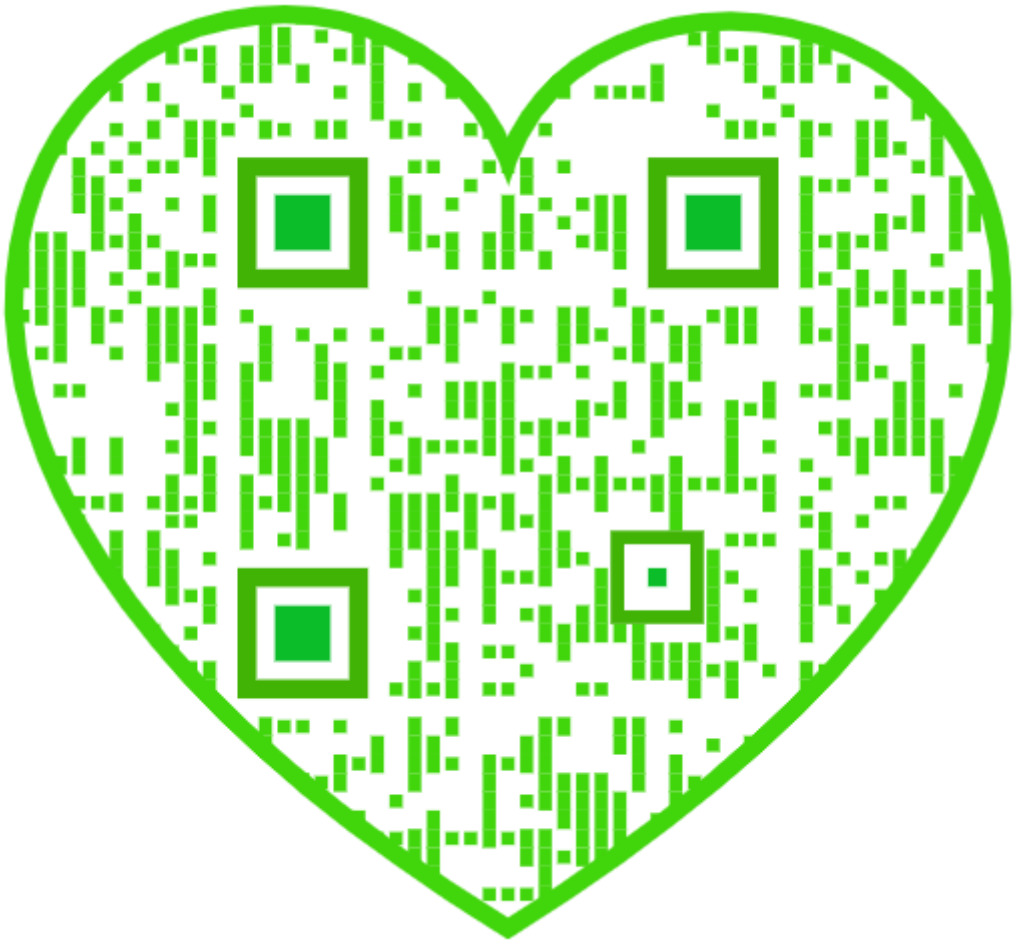
Mr. Ellett, the contractor, having claimed the revenue arising from passengers going over the foot bridge till the time expires in which the whole was to be completed, the directors it appears became dissatisfied and have attempted to get possession of the Bridge.—Mr. Ellett is perfectly right in his claims and law and justice will bear him out in his views on the subject. The bridge is his en toto until it is delivered up to the directors, and he has a right to allow no person to pass over without his consent.

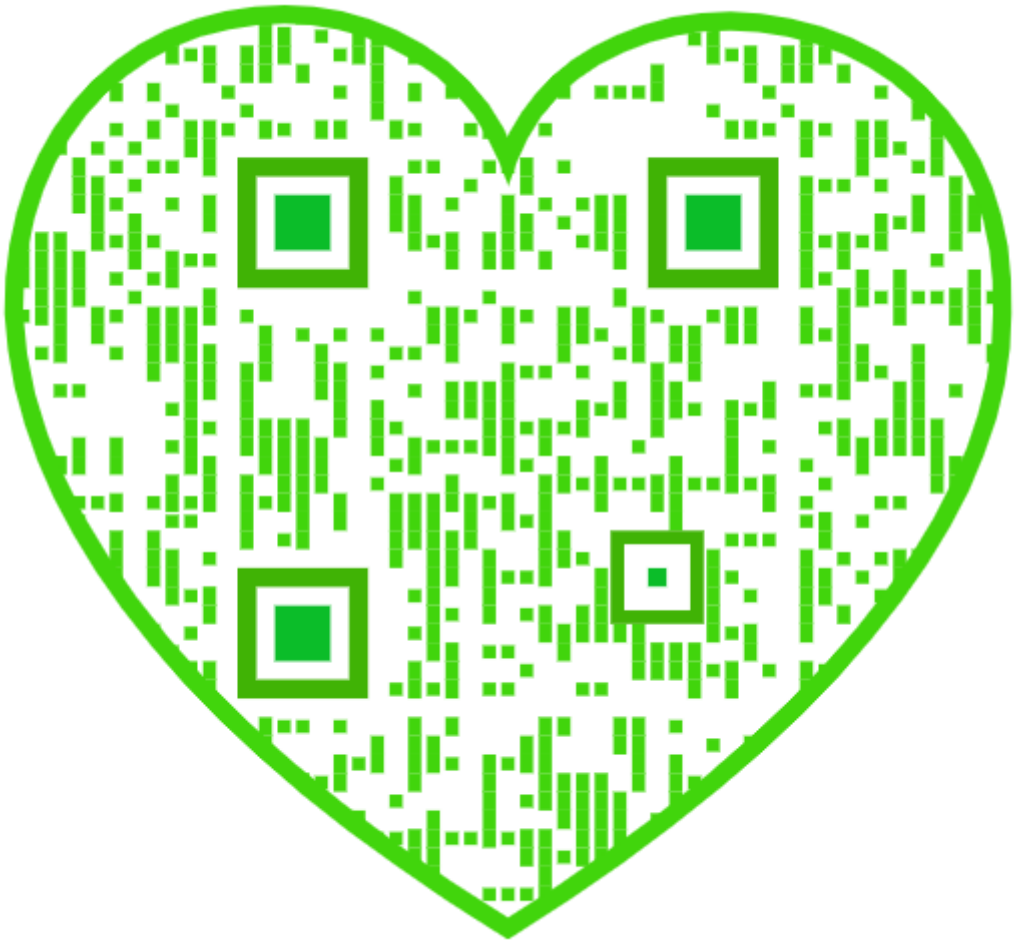
The Largest Building in America.

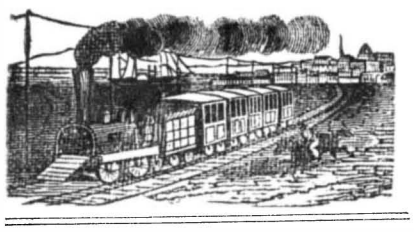
A new freight Depot is now in process of erection at East Albany, N. Y. for the Albany and Boston Railroad Company, 750 feet in length by 133 feet in width It is supposed 1,300,000 bricks will be required in its construction, and the cost will be $100,000. It is to be completed in November, and will be the largest building in America

Seventy Sugar Mills have been made this season in Cincinnati, and shipped South.—They cost from $3000 to $5000 each, making about $350,000 for the seventy.

© 1848 SCIENTIFIC AMERICIAN, INC







Late News from Europe.

By the latest arrivals it appears that too many have been calculating upon the overthrow of thrones and the triumph of Freedom. Alas, this is not the case. The Austrians have most signally defeated the Italians; the Russians are mustering thick and fast on the German frontiers, and monarchy seems strong and all powerful before every movement of a revolutionary character. But all the revolutionary movements that have yet been made, were just the substitution of one king for another—(France excepted.) Italy for Charles Albert in place of the Emperor of Austria, and Sicily the Duke of Genoa in place of the King of Naples. The Germans have elected an Emperor—an additional monarch for Europe—therefore it is best for our people to have their eyes open and not consider every revolution as a movement for liberty—in fact the people of Europe generally, seem not to know what true liberty is. It is reported by the latest news that the insurgents in Ireland have been defeated in one engagement with but very little credit to the courage of the people.—Other accounts state that the troops were defeated and Gen. McDonald and 6000 soldiers were killed, but this cannot be true. The Committee to forward money to Ireland from this city, have published a card calling upon the people not to believe the accounts of English newspapers. The public therefore do not know who to believe—but the power of the British does not appear to have retrograded before liberal opinions lately, but has become more despotic. In America alone, and in France in a measure, free opinions have been advancing, and there is a line over which we must not step. We must beware and not sacrifice true freedom to the hostile contentions of party—the European people have been fighting against and for certain men—we must struggle alone for principles.

The Commissioner of Patents.

It is well known to our readers that charges were preferred against the Hon. Edmund Burke, Commissioner of Patents, by Dr. T. G. Clinton, an Assistant Examiner in the Patent Office. The charges had an evil appearance in every line, and we refrained from publishing them as a matter of honor. We stated in a previous article, that the committee to whom the charges were referred, would do justice to the case. The Committee has decided, and their finding was in accordance with our own convictions, that Mr. Burke had done naught but what was commendable. Throughout the whole of this affair, the prosecutor has followed up his charges with dogged tenacity. Three times were they preferred before as many tribunals, and as often was the Commissioner justified. Mr. Clinton was offended because another, Mr. Renwick of this city, was appointed an Examiner over him and this is the reason why he preferred the charges against the Commissioner. These are not our opinions, Mr. Clinton could not conceal them. It is something of which any man might be proud "to be the defendant", as Mr. Burke has been "thrice successful."

Waste Steam Usefully Applied.

Rather a useful way of disposing of waste steam from engines has been adopted by a gentleman in Philadelphia. He raises pine apples with it. The steam is introduced under the roots of the plants, and the combined heat and moisture act so powerfully that the pine apple is soon ripened, while the body of the plant, being all day exposed to the open air, assumes a healthy and agreeable taste, which renders the fruit far superior to those ripened in hot houses. This plan has been successfully practised in the culture of grapes in Britain, where the climate is too cold to to bring them to maturity.

Caveats in England are frequently renewed from year to year

Great Conflagration in Albany.

On Thursday last 417 houses were destroyed in Albany, the capitol of our state. This is the largest and most destructive fire that ever took place in that city. No less than three millions worth of property have been destroyed and a space occupying 20 acres laid in a smoking heap of ashes. A number have been killed and not a few wounded. Some thousands of poor people have been driven out of house and home. Great numbers are poor hard working Irish, and some of the money contributed for munitions of war can truly and satisfactorily be here applied to measures of relief. This is home charity—let a shield be provided for those poor people—now is the time to test the true principles of patriots, to see if charity is a ruling virtue. We perceive that the fire has been destructive to many with whom we were acquainted, and for whose misfortune we are sincerely sorry, but Albany will yet arise, Phœnix like, from her ashes. She has plenty of wealth left.

Electrified Cotton.

Take a small lock of cotton, extend it in every direction as much as can conveniently be done, by a linen thread about five or six inches long, or by a thread drawn out of the same cotton, tie it to the end of the prime conductor of the electric machine; set it in motion, and the lock of cotton, on being electrified, will immediately swell, by repelling its filaments from one another, and will stretch itself towards the nearest conductor. In this situation let the cylinder be kept in motion, and present the end of your finger, or the knob of a wire, towards the lock of cotton, and it will immediately move to the finger, and endeavour to touch it; but take with the other hand a pointed needle, and present its point towards the cotton, a little above the end of the finger, and the cotton will be observed immediately to shrink upwards, and to move towards the prime conductor. Remove the needle, the cotton will come again towards the finger Present the needle, and the cotton will shrink again.

Expanding the Chest.

Those in easy circumstances, or who pursue sedentary employments within doors generally use their lungs but very little—breathe but very little air into the chest, and thus, independently of positions, contract a wretchedly narrow, small chest, and lay the foundation for the loss of health and beauty. All this can be perfectly obviated by a little attention to the manner of breathing. Recollect the lungs are like a bladder in their structure and can be stretched open to double their ordinary size, with perfect safety, giving a noble chest, and perfect immunity from consumption. —The agent, and the only agent required, is the common air we breathe, supposing however, that no obstacle exist, external to the chest, such as lacing or tying it around with stays, or tight dresses, or having shoulders lay upon it. On rising from the bed in the morning, place yourself in an erect posture, your chest thrown back, and shoulders entirely off the chest; now inhale or suck in all the air you can, so as to fill the chest to the very bottom of it, so that no more air can be got in; now hold your breath and throw your arms off behind, holding in your breath as long as possible. Repeat these long breaths as many times as you please. Done in a cold room is much better, because the air is much denser, and will act much more powerfully in expanding the chest. Exercising the chest in this manner, it will become very flexible and expansible, and will enlarge the capacity and size of the lungs.

Improved Method of constructing Gas Burners.

In most of our churches the bat wing form of burners are used. This gives a full and brilliant light when the flat side is towards the eye, but not when the edge is towards the observer. If a second bat wing be cut so that the flames of both will cross each other at right angles, a splendid improvement is effected, as the light is good in whatever direction it is seen.

There are 3710 Temperance Societies in the United States, including the Sons of Temperance. The number of members is 2,615,000.

Den of Darkness.

An underground Counterfeit establishment has been discovered at Brighton, near Boston. It is a room of twelve feet square, concealed under the cellar of a house nearly a century old. A keg half full of U. S. half dollars, dated in 1833, was found, with a machine for polishing coin. A murder was committed there some years ago. The discovery has created much excitement.

A Little Hero.

Abby Daniels, a little girl six years old, fell off the wharf at Cambrid e, Mass. when a son of Captain Whitney aged 12 years, jumped overboard and brought her to the wharf, resusciated. He next plunged into the water and went in pursuit of her bonnet, which was floating off with the tide. Having brought the bonnet safe to land he took off his jacket, hung it up, and then started after an engine, which was on its way to a fire.

A Runaway Peer

Viscount Arbuthnot, who stands charged with forgery, and who is reported to the House of Lords by the Sergeant at Arms, "as not to be found," is supposed to have escaped to this country. He sold his peerage and ancient estate for a Broker's bill. He is a poor Scotch fool. We would rather be an honest mechanic than he, ten times over.

Drinking in London.

The amount of hard cash paid for intoxicating drinks in London, is alone three millions sterling per annum; this sum, if spent in sewers, would afford upwards of 1700 miles at 8d. per foot, and of ample capacity for the largest thoroughfare

Broad and Narrow Guage.

Before a committee of the House of Lords, Mr. Stephenson gave evidence to show that the express speed of the South Western Railway, between London and Southampton, was 1½ miles per hour faster than the Great Western between London and Exeter. The South Western is the narrow guage.

The Benefit of an open Mouth.

A curious case of injury is recorded in connection with the recent outbreaks in Paris. —It is related of one individual that a ball went in at one cheek and out through the other, but as his mouth happened to be open it touched neither his jaws nor his teeth.

Springfield Mechanics.

A locomotive called the "Hingham" has just been completed at the Springfield Car and engine Factory, Mass. It is a beautiful machine of nineteen tons, and intended for speed in drawing passenger trains on the Old Colony railroad. Three elegant large size passengers cars are also finished at that factory, for a railroad in New Jersey. As many men are now employed in this factory as at the U. S. Armory.

Vancouver's Island.

Great excitement was lately manifested in London by a report that the government was about to give away Vancouver's Island on the Oregon coast, to the Hudson Bay Company. If the British Government does this it will commit an act of the most insane policy. The minister who would sign the patent should be kept in Bedlam.

A Propelling Gas.

It is reported that a chemical gas for the propulsion of machinery, a substitute for steam, has been invented by Mr. Joseph P. Wilson, a practical chemist, now residing in this City. He is preparing a model steamboat with which to exhibit its utility, and that will be an end o't.

Ole Bull turned Fiddle Maker.

This celebrated Norwegian violinist is now working as a journeyman in the manufactory of M. Vuillaume, a Parisian musical instrument maker, in the hope of being enabled to make a violin that shall equal the tones of those made by the celebrated Stradivarius, of Cremona; and for this purpose he has brought from Norway wood more than 200 years old.

It has been calculated that a poor-rate of sixpence in the pound, levied on every parish in England and Wales, would annually provide the passage money and outfit for 200,000 emigrants to Australia, or 300,000 to the Canadas.

American Pills.

A London paper says that patent medicines produce nearly $170,000 per annum to the revenue; of this more than two-thirds is paid by a new medicine just introduced into England from the United States, under the singular title of the "Shaking Quaker's Herbal Pill."

Animal Magnetism a Science.

A Mr. J. J. Kerby, magnetiser, has proven in a law suit, that it is a science, and compelled the authorities of Columbus, Ohio, to pay him back forty three dollars, which they charge for a licence to lecturers upon subjects, not of a scientific nature.

Oil and Cotton.

Spontaneous combustion arises frequently from cotton that has been saturated with oil. —A case of this kind occurred at Boston on Thursday morning, in the spontaneous combustion of some bales of cotton waste deposited in the Worcester Railroad Depot. The fire was extinguished with slight damage.

Iron Ore.

We have seen, says the Boston Journal, a specimen of iron ore which from appearance is of the first quality, discovered by Otis H. Weed a few days since, on his farm in South Reading, while cutting a ditch. He has opened a vein of iron which indicates a very extensive mine.

A steamer having a frame work of iron, is contracted for at Philadelphia. The plank will be screwed to the frame work, instead of being spiked as at present. The ribs are concave on the outside and convex inside. This is to pour oil down the grooves for preservation. She is intended for the Hudson river.

The explosion of the Steamboat Edward Bates, near St. Louis, on the 12th inst., was an appaling calamity. Twenty-eight persons were killed and thirty seriously injured. They were principally from Missouri and Illinois. Samuel Ferguson, of New York was badly scalded.

An exchange tells a story of lightning freaks, where an apple-tree in Helderbergh was struck and split from top to bottom. A young man named Smith was leaning against the tree at the time, and slid into a cavity, when the tree closed and held him fast.—Axes and crowbars were resorted to before the man could be extricated. This was a scientific trick of the lightning.

A collision took place on the 16th inst. on the Long Island Railroad, by which one engineer was killed and the conductor, Mr. Homan shockingly mangled. The accident occurred, it is said by one engineer being too anxious to make a fast trip.

Some of our steamboats on the North River are making trips this summer and running 160 miles at the rate of 22 miles an hour. Beat this all ye swift steamers of Europe, Asia, and other parts of the world, if ye can.

In Great Britain alone there were expended for intoxicating beverages last year, the sum of $490,000,000 and there were brewed 520,000,000 gallons of malt liquors, or 17 gallons for every inhabitant. No wonder the poor, *are poor.*

The Fitchburg, Mass., Woolen Mill Company have suapended operations for the present. This mill has been in operation over 30 years.

It is reported that the garbage carts of our City are laid up for want of grease, it being the intention of the authorities to plant a few street crops next season.

The New York and New Haven Railroad Company intend to place an engine on the road in a few days, between Bridgeport and Fairfield.

New Orleans and New York are now united by Telegraph. Despatches are now received on the same day they are written in New Orleans.

Large quantities of guano have been found on the roofs of some of the old cathedrals in Paris.

Capt. Taylor, the inventor of submarine armor, is not dead as was reported, but alive and well.

© 1848 SCIENTIFIC AMERICIAN, INC

Bramah's Planing Machinery.

(Continued from our last.)

"Seventhly, I regulate the motions of both these parts of the apparatus as forementioned, by means of a new invention, which I call a universal regulator of velocity, and which is composed as follows; viz. I take any number of cog wheels, of different diameters, with teeth, that will exactly fit each other through the whole, suppose ten or any other number, but for example say ten, the smallest of which shall not exceed one inch in diameter, and the largest, suppose ten inches, and all the rest to mount by regular gradations in their diameters from one to ten. I fix these ten wheels fast and immoveable, on an axis perfectly true, so as to form a cone of wheels. I then take ten other wheels, exactly the same in all respects as the former, and fix them on another axis also, perfectly true, and the wheels in conical gradation also; but these latter wheels I do not fix fast on their axis, like the former, but leave them all loose so as to turn upon the said axis, contrary to the former which are fixed All these latter wheels I have the power of locking by a pin, or otherwise, so that I can at discretion lock or set fast any single wheel at pleasure. I then place the two axis parallel to each other, with the wheels which form the two cones, as above described, in reverse position, so that the large wheel at the one end of the cone may lock its teeth into the smallest one in the cone opposite, and likewise vice versa. Then suppose the axis on which the wheels are permanently fixed to be turned about, all the wheels on the other axis will be carried round with an equal velocity with the former, but their axis will not move. Then lock the longest wheel on the loose axis, and by turning about the fastened axis as before, it must make ten revolutions while the opposite perform but one; then by unlocking the longestw heel and locking the smallest one at the contrary end of the cone in its stead, and turning as before, the fastened axis will then turn the ten times, while itselt only revolves once Thus the axis or shafts of these cones, or conical combination of wheels, may turn each other reciprocally, as one to ten, and as ten to one, which collectively produces a change in velocity under a unitorm action of the primum mobile, as ten to a hundred: for when the small wheels on the loose axis is locked, and the fast one makes ten revolutions, the former will have one hundred. And by adding to the number of these wheels and extending the cones, which may be done ad infinitum, velocity may be likewise infinitely varied by this simple contrivance: A may turn B with a speed equal to thousands or millions of times its own motion: and by changing a pin and locking a different wheel, as above described, B will turn A in the same proportion, and their power be transferred to each, in proportion reciprocally as their velocities. Here is, then, a universal regulator at once for both power and velocity. In some instances I produce a like effect by the same necessary number of wheels, made to correspond in conical order, but instead of being all constantly mounted on the axis or shafts, as before described, they will reciprocally be changed from one axis to the other in single pairs, matched according to the speed or power wanted, just as in the former instance. This method will have in all respects the same effect, but is not so convenient as when the wheels are all fixed, &c.

(To be concluded.)

For the Scientific American.

A Word about Lightning Rods.

It is an established fact that a lightning conductor in order to fully accomplish the purpose for which it is designed, must have its lower extremity in perfect communication with the earth.

The reason is that the electric fluid in passing from one body to another will select for its course that line which will afford it the most direct and perfect communication: it matters not whether any metallic substance lie near its course, for unless the fluid can be aided in its passage to its destination it will not pass through the metal. Hence a lightning conductor to be effectual must give a free and uninterrupted passage of the fluid to the earth, which cannot in any manner be so well done as by having it terminate in water; that being also a good conductor.

As it is oftentimes inconvenient to dig sufficiently deep for that purpose, many conductors are erected which have their termination in comparatively dry earth; consequently they prove inefficient.

I will suggest a plan which I think to be the most economical of any which can be adopted for protecting houses, and perfectly effectual. It is to have the rod descend to the bottom of a well, if the well be sufficiently near the house, which is generally the case in the country. This can be done at a trifling extra expense from the ordinary mode of erecting them. If the well be situated under cover of the building to be protected, the conductor may enter the ground near the house and thence pass underneath the surface to the well and no fears need be entertained from such an arrangement.

I well recollect an instance of a house being struck by lightning which was furnished with a conductor erected in the usual manner; the lower end being but a few feet beneath the surface of the ground. The charge descended the rod to the ground and from there passed in a horizontal direction directly to the house, scattering furniture and plastering in sad confusion. About twelve feet from where the rod entered the ground was a never failing well of twenty feet in depth, in which the rod might have been placed and thus have afforded ample protection to the building. A rod passing down by the side of a well will not in the least obstruct the drawing of water. Yours, &c.

TYRO, JR.

Indian Corn.

Indian Corn is an ancient, well known, and indispensible production of nature It consists of a number of varieties, which are thought to owe their distinctive characters to the accidental modifications of climate, soil and culture, rather than to any original differences. When due regard is paid to the varieties, it may be considered a sure crop in almost every portion of the habitable globe, between the latitude of 43° North, and a corresponding parallel South. Its principal culture is confined to the United States, Mexico, the West Indies and most of the States of South America. It is also cultivated with success in Southern Europe generally. It is likewise found to thrive in India, China, Japan, Australia, the Sandwich Islands, groups of the Azores, Madeira, the Canaries, as well as other ocean isles. Roulin, Humbolt, Bonpland and others, have noticed the plant in its indigenous state in America, and hence have concluded that it was first derived from this country. All the early historians, both of North and South America, give the shortest testimony that this grain is of American origin, and speak of it as having constituted a great part of the food of the Indians, from time immemorial. Mr. choolcraft, in a late report, says it is conceded on all hands that it is a tropical, or at least, a Southern plant. He remarks that it was not known in Europe before the discovery of this country, and that we learned the mode of cultivation from the Indians, and not they from us. It was cultivated by the Iroquois in fields sufficiently large to entitle them to the name of agriculturists; and was undoubtedly highly praised by them as an essential article of support. Mr. Schoolcraft states that the warriors of the six Nations were in the habit of undertaking journeys of thousands of miles in extent, carrying no other food than a little meal from parched and pounded corn, relying on the forest game for meat. One table-spoonful of this meal mixed with a little sugar and water, will sustain a warrior for twenty four hours, without meat. Maize contains less nutritive matter than wheat, barley or oats, but more than either rice or potatoes. In fact, it has about three and a half times the quantity of nutritive matter found in potatoes, a much larger proportion of starch, and less water. The proportion of oil found in corn, as far as it has been examined, varies, from an entire absence to 11 per cent. according to the varieties employed. Oily Corn makes a dry kind of bread, and is not sufficiently adhesive to rise well without an admixture of rye or other flour.

The varieties of Indian Corn are very numerous, exhibiting every grade of size, color and conformation, between the shrubby reed that grows on the shores of Lake Superior to the gigantic stalks of the Ohio Valley; the tiny ears with flat, close-clinging grains of Canada; the brilliant, rounded little Pearl or the bright-red grains and white cob of the eight rowed hæmatite, to the swelling ears of the large white and yellow Gourd-seed of the South. There are something like 11 principal varieties cultivated in the United States, which may be distinguished by the number of rows of grains on the cob, and the color, shape or size of the kernels.

The Cabbage.

Cabbage, itself is one of the most ancient and esteemed of vegetables, and as an esculent it stands in the highest estimation. Like all other cultivated plants, the Cabbage has undergone so many changes and assumed so many varieties that it has become rather difficult to give any description that will apply to the whole. Without exaggeration, (says one of our best gardeners,) many of the sorts are as far superior to the others in flavor as cream is to sour milk—yet we continue to grow, year after year, the same varieties; some of which are so rank and strong that they are only fit for the cattle-yard or the animals, to the neglect of others not only tender and delicious to the taste, but truly agreeable to the olfactory organs. There are about a dozen principal varieties in common cultivation, including three Yorks—the Early, Large and Late—the Nonpareil, the Vanack, the Battersea, Sugar-Loaf, the Early Dutch, the Drumhead and Savoy, and others.

Coking Diamonds.

Intelligent readers are aware of the fact, as a curiosity of science, that the royal diamond and plebeian coal are one and the same substance, identical in composition, only differing in their condition, the one being in a rude state of nature, coarse and barbarous, the other refined and sublimated into the highest ranks of crystalline excellence; and that the diamond is capable of being burned away like charcoal, as is occasionally demonstrated by lecturers on chemistry, in their experiments. Not satisfied with our knowing so much on this subject, greatly, of course, as the knowledge operates to the dispraise of the monarch of gems, a French savant, M. Jacquelain, has discovered another humiliating fact, viz: that it may be coked—turned like a piece of base, sea coal, without combustion, from a bright diamond, into a good bit of coke, such as they turn out in such quantities, every day, at the gas-works.

The diamond can only be coked by the intense heat of electricity. M. Jacquelain's process was as follows,—as we find it described by the London Athenæum, in a report of a lecture by Faraday "on the conversion of diamond into coke."

Having attached a piece of hard gas retort carbon to the positive wire of Bunsen's battery of 100 elements, he placed on it a small piece of diamond. He then armed the negative wire with a cone of the same carbon, and, by dexterous manipulation, enveloped the diamond with electric flame. After a short interval, the diamond underwent a sort of ebullition, became disentegrated, softened, and was actual coke.

How Spiders make Bridges.

Some of the most distiuguished naturalists of the world, believe that spiders have the art of crossing streams of water on bridges of their own making. Mr. Spencer relates the following curious fact:—"Having placed a large, full-grown spider, on a cane upright in the midst of a stream of water, he saw it descend the cane several times, and remount when it arrived at the surface of the water. Suddenly he lost sight of it wholly; but a few minutes afterwards to his great astonishment, he perceived it quietly pursuing its own way on the other side of the stream. Having spun two threads along the cane, it had cut one of them, which, carried by the wind, had become attached to some object on the bank, and so served the spider as a bridge to cross the water."

Curiosities of Astronomy.

THE SUN.

Although the sun is nearly a million and a half times larger than the earth, yet the density or compactness of the matter of which it is composed is only about one-third that of our own planet or nearly the same as water! When viewed through a telescope the surface of the sun appears intensly bright and luminous as if giving out both light and heat; on its surface dark spots occasionally appear generally surrounded with a border of a less dark appearance, some of which have been calculated to be 45,000 miles in width! It has been surmised that the sun is a dark body enveloped in an atmosphere capable of throwing out light and heat, and that the dark spots are merely openings in this atmosphere through which the sun is seen.

MERCURY.

This is the nearest planet to the sun, the the distance being 37,000,000 of miles. Her diameter is only 1340 miles. Her days are 24 hours 5½ minutes in length; her years, or the period in which she revolves round the sun, being 88 of our days. The density of Mercury is far greater than our planet, being equal in weight to lead, so that a human being of our kind being placed on her surface would be so strongly drawn towards the ground as scarcely to be able to walk! mountains of great height have been observed on this planet one of which is 10 3-4 miles high. Mercury can only be seen from the earth about two hours before sun rise in the morning and two hours after sun set in the evening.

Lapis Lazuli.

The following particulars relative to this beautiful blue pigment, were lately published by the Petersburg Academy of Sciences. Lapis Lazuli are found in all the rivers that fall from Khamardaban, but mineralogists have not yet succeeded in finding its flow notwithstanding the minute researches which have been made in divers points. Mr. Moor the mineralogist, who spent two summers on the banks of the Hindianka, succeeded only in discovering the flow of glaucclithe, or calcareous blue spath,—and every attempt since made to ascertain the place of formation of the lapis lazuli has been unsuccessful. The natives affirm that this precious stone is met with after the heavy rains have washed down the pebbles found in the beds of the rivers. Mica, is found in great abundance in the neighborhood of Hindianka, in the form of not very thick flakes, lying upon a bed of soft clay as if it had been deposited upon it. The inhabitants frequently resort to these places to carry of the mica—which they put into their window-frames in place of glass.

Truth and Sincerity.

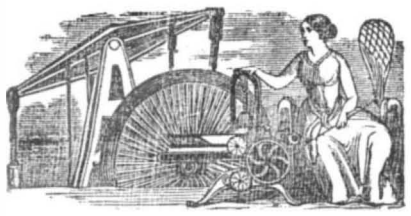
Truth is always consistent with itself, and needs nothing to help it out; it is always near at hand and fits upon our lips, and is ready to drop out before we are aware; whereas a lie is troublesome, and sets a man's invention upon the rack, and one trick needs a great many more to make it good. It is like building upon a false foundation, which continually stands in need of props to shore it up, and proves at last more chargeable than to have raised a substantial building at first upon a true and solid foundation; for sincerity is firm and substantial, there is nothing hollow or unsound in it, and because it is plain and open, fears no discovery, of which the crafty man is always in danger; and when he thinks he walks in the dark, all his pretences are so transparent that he that runs may read them; he is the last man that finds himself to be found out; and, whilst he takes it for granted that he makes fools of others, he renders himself ridiculous.

Silver in California.

An immense mine of silver had been discovered in the valley of San Jose, four miles from the town of that name, by Mr. J. F. Reed. The vein is described as being three and-a-half feet thick, having an uninterupted run east for three miles, the depth unknown. With a few hours' labor several tons of ore were uncovered. It was fine ore and required but little expence in smelting.

No person but a native, should file a caveat in England.

© 1848 SCIENTIFIC AMERICIAN, INC



New Inventions.

New Railroad Gate.

Mr. Richard Coffin, of Mass., has invented a gate for railroad crossings, so arranged that as the train approaches the gate closes, and opens after the train has passed. It is a simple and ingenious invention. We hope to give an engraving of it before long.

New Spark Arrester.

Mr. James Cunningham, of Cannonsburg, Penn., has lately secured a patent for a very novel mode of destroying and arresting sparks that issue from the smoke pipes of locomotives and steamboats or other engines. The sparks are forced through a perpetual shower in a perforated spray trough, by a double fan or blower. The water is supplied by a cistern to a revolving bucket operated by a wheel.

Improvement in Printing Yarns.

Mr. Andrew Hartman, of Clapville, Mass., a very ingenious improver of machinery connected with weaving, has taken out a patent for a new and valuable improvement in the printing of yarns for tapestry carpeting, or any other kind of tapestry. It is well known that all tapestry carpeting, by the invention of Whytock, is just woven like plain goods, with weft or filling of a uniform color. The figures or pattern is printed on the warp and thrown up with wires above the weft, so that when the loop formed by the wire is cut the pattern is presented on an upraised velvetty surface. The printing of the warp has been kept somewhat secret—we have even been denied admission into a factory printing house near Troy, in this State, although we knew how the warps were printed, and the method of preparing and steaming the colors, nevertheless, this being the main part of this valuable invention of Whytock, it is not a subject of great wonder, that it has been kept as much a secret as possible. Mr. Hartman's invention is an improvement in the machinery of printing by cylinders, and it prints the warp more evenly and correct, (on which the whole value of the invention depends) than is done by other machinery now in use, for it frequently happens that the warps are so badly printed, that to throw up the pattern correctly, the carpet is *bagged* in the weaving and consequently is considered a damaged article.

Invalid's Bed.

We were pleased last week to see a very excellent improvement on a bedstead for invalids, whereby the head of the sick person may be raised up with a pillow by giving a few turns to a crank. On one end of the bed there is a small rod which extends to the other, and on this rod is an endless screw meshing into a small cogwheel on a cross rod, which by turning round moves a cam on each side and raises the head part of the bed, gradually raising the sick person from a prostrate to a sitting posture. The inventor is Mr. J. Massey, of this city. He has exhibited his model to men in the business who have been highly pleased with it.

Novel Musical Instrument.

A patent was granted last year for a novel instrument which the Report of the Commissioner of Patents states produces tones by tuning forks.

The sound of the tuning fork is by itself feeble; but if while vibrating it be held over the mouth of a vessel to give a vibration in unison with the note of the fork, the sound is very much increased. This fact has been long known, but the inventor has availed himself of it in a peculiar manner in the production of his instrument. By means of keys like those of a piano forte, the forks are struck with a hammer of a peculiar kind, an essential difference being made in the hardness of the hammer for the high tones. The resonance of sound is obtained by means of boxes of thin wood immediately behind the tuning forks. The lower tones are produced by spiral wires similar to those used as substitutes for bells in common clocks. Some of the notes in this instrument are very sweet and of considerable volume. There appears, however, some difficulties to be overcome, such as want of volume of tone in extremities of the scale, limited range, and the different character of sound from the wires; but which the inventor believes to be surmountable.

Machine for Cutting Files.

By the Commissioner's Report of Patents, we learn that a patent was granted last year for a machine to cut Files, not by blows but by pressure, and its object was to increase the pressure upon the chisels for cutting, in proportion to the resistance met with, whether the resistance was in consequence of width, or hardness. The great difficulty has been to accommodate the pressure to variations of hardness in different places of the file. As we received a few communications on the subject a short time ago, this will suffice for an answer. A manufacturer who makes the hand cut kind has informed us that from none that he has seen made by a machine, does he fear competition. This, however, may not be long.

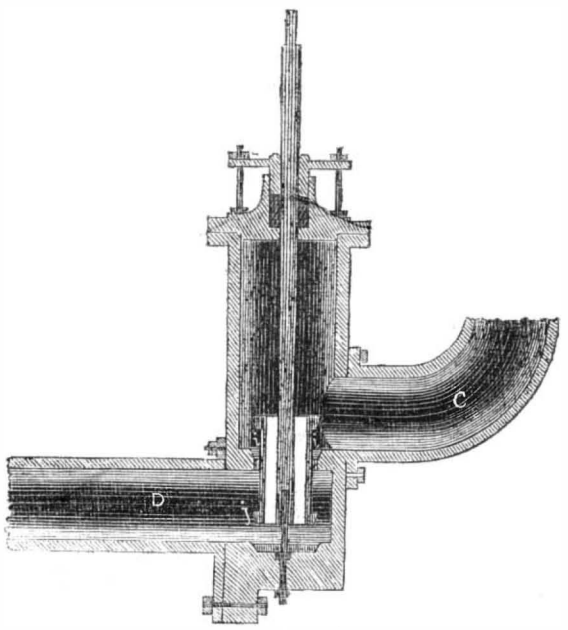
Improvement in Pans for making Sugar.

Messrs. Benson & Day, of Brooklyn, N. Y. have secured a patent for enclosing a vacuum pan in a casing or jacket, leaving a space between the two, communicating with an aperture of the pan and the air pump. By a peculiar arrangement they can also use a series of sugar pans in such a manner that either of them can be used at pleasure as a vacuum or evaporating pan.

Improvement in Fan Blasts.

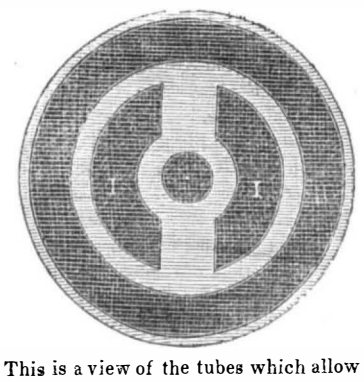
If the series of fans be placed in such a manner as that the blast of air thrown from one will be communicated to another, and employing a larger inlet pipe than is at present used, not only is the blast made stronger with less power employed to drive it, but it is also more uniform and improves the quality of iron when used in that manufacture.

HILL'S PATENT BALANCE VALVE.---Figure 3.



This represents another view of the tubular applied as a governing valve. C, is the steam pipe, and D, the pipe leading to the steam chest, or cylinder of the engine *i i*, is space between the top of the valve flange and the upper seat of it. The light spaces between the centre rod and circumference are the tubes passing through the body of the valve. I, is the bottom flange, and shows how it sits in the valve seat.

Fig. 4.



This is a view of the tubes which allow the steam to pass through the body of the valve, as represented by *i i*. The valve in Fig. 3, is represented as being off its seat—the steam passes through the tubes *i i*, and goes into a small chamber, seen like a cup at the valve seat, therefore the valve is pressed upwards and the upper and lower surfaces being proportional, it is kept by the pressure of the steam in equillibrio.

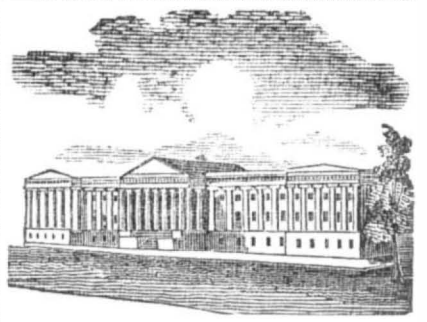
Before closing the description of this invention, we cannot help alluding to an hydraulic balance valve invented by our ingenious townsman, Mr. W. Coffee, brother of Mr. Coffee, engineer, whose foundry is at the corner of West and Beach streets, this city. The valve is now to be seen at the foundry, and applied to a main pipe of the Croton. Although of great weight and dimensions, yet it is so constructed and balanced, that a boy may operate it with the application of five pounds weight. We perceive by Examiner Fitzgerald's Report for 1847, that a patent was granted for a drop cut-off valve, different from another invented a few years ago, "which, when it fell, dropped into a cup containing a liquid to prevent it from slamming." The one patented last year substitutes a moveable inclined plane for the liquid.

Engine and Locomotive Boiler.

Knowing that there are many mechanics in various parts of the country who would use steam in their shops, provided they could obtain an engine of the right size at a moderate price, we are induced to call attention to a most excellent engine and boiler which we have now on hand for sale. The engine is a horizontal one of 12 horse power, complete in every respect, and from the substantial manner in which it is constructed will last many years The boiler is of the Locomotive kind, made of the heaviest wrought iron in the very best manner. The superiority of locomotive boilers is well known. This engine and boiler have only been used a little over six months, costing when new $1600; they are fully worth that sum now, but to insure an immediate sale they are offered for $800 cash. The purchaser will be lucky. All the necessary connections, pump, &c. are included.—They may be sent to any part of the United States and if desired an engineer will accompany to put them in operation.

A Small Model.

At a late conversazione of Civil Engineers in England, there was exhibited a model of the Great Britain steamer, full-rigged, and containing fac-similes of the engines, with the screw propeller complete, and working by means of condensed air, which weighed but one ounce.



Our List of Patents.

Our weekly List of Patents not having arrived from Washington when we went to press, our subscribers will be pleased to overlook their absence from their usual place. It is something which we could not control.

INVENTOR'S CLAIMS.

Bullets.

To John Drummond, of New York City, assignor to William Brewster, of New York City, for improvement in machinery for making Bullets. Patented in the United States 9th May, 1848; in England, ——. Claim.—What I claim, therefore, and desire to secure by Letters Patent, is the method, substantially as herein described, of forming bullets, by cutting at each operation a piece across the width of a bar of lead, made thinner and wider than the diameter of the intended bullet, that the punch in the operation of cutting may force the said piece of lead into the die and then swedge it into the required form, and thus avoid leaving remnants, as described

Twyeres.

To William L. Barnes, of Buffalo, N. Y., for improvement in Twyeres. Patented 25th July, 1848, in the U. S. In Canada ——— What I claim therein as my invention, is the twyere constructed as herein described, that is to say, having a spheroidal air chamber with a convex top and moveable cover through which the block is blown, and which can be turned to make a long or broad fire at pleasure.

Enamels for Iron.

To Charles Sturner, of New York City, for improvement in Enamels for Iron. Patented 25th July, 1848. I do not claim as new, or my invention, enameling iron or other metals, or any new way of applying the same. What I do claim is the peculiar compositions A and B, composed of the parts and compounded as described.

Window Blinds.

To Cheney Reed, Cambridge, Mass. for improvement in Hinges and Fastenings of Window Blinds. Patented 1st August, 1848.—What I claim is the improvement is hanging blinds, so that they may be opened or closed without raising the window, viz: by supporting them on a tilting or reversable circular, or other shaped inclined plane, fixed on the end of a turning rod, said plane or rod being operated or tilted from the interior of the apartment, a friction roller being connected to the blind and turning on said plane as above explained.

Radiators.

Robert Robinson, of Newburyport, Mass., for improvement in Radiators. Patented 25th July, 1848. What I claim as my improvement is the manner in which I construct, combine and arrange the transverse division places, smoke passages through them, the smaller deflecting plates, smoke passages around them, and the main drum and its inlet and exit pipes, in order that they may operate together substantially in the mode and for the purpose as specified. And in combination with the transverse division and deflecting plates and chambers of the main drum, I claim the air tubes passing through them in manner described and for the purpose of adding to the air heating surfaces, or increasing the radiating powers of the apparatus as specified

Hot Air Furnaces.

To David Culver, of New York City, for improvement in Registers for hot air Furnaces. Patented 10th August, 1848 What I claim as my invention and improvement is the combination of the lever of the register, the said lever being placed within and beneath the top of the box containing the same as herein described.

© 1848 SCIENTIFIC AMERICIAN, INC

NEW YORK, AUGUST 26, 1848.

Inventors and Manufacturers.

We have lately received a number of communications inveighing against certain inventors, for not allowing some people the right to use certain inventions at a price to suit those who wish to use the same. We always like to see a generous dealing in "the right to make and sell." But while we inculcate this doctrine, we are well aware that there are many who do not deserve this privilege for love or money. There are many who live by the brains and the labor of others and who have neither the generosity nor politeness to acknowledge their indebtedness. There are men who are perfectly willing to use another man's invention that might bring them in threefold profits in comparison with some old process in their business, but who feel mighty backward to pay a fair price for the invention —they are willing to reap all the profits, and let the inventor bear all the toil.

We like to see such men *brought right square up*, as our friends say down East—they do not deserve the right to use an invention upon any consideration but that of a change of heart. We have no sympathy with those who have no generosity of feeling towards inventors, for we know full well, that many inventors have been driven almost to desperation by patent plunderers, and as an example we would instance Whitney, the illustrious inventor of the Cotton Gin. It is often said that "many patents are granted for things that are worthless." Well, if they are worthless let the inventors alone with their own—they will soon find their level. But every patentee has the full and exclusive right by our laws to do whatsoever he chooseth with his own invention for a term of fourteen years.

Why should people find fault if they cannot use the inventions of others; are they any worse off than before the new invention was discovered?

This is a question we have asked for the sake of answering it, as it furnishes manufacturers with one strong argument for inventors to be generous to them also.

Let us suppose for example, that there is one man who manufactures some article, and has at much expense fitted up machinery and invested both capital and industry in his business. Now let us suppose for example also, that another man with no capital but genius, invents a new machine or a new process, that will manufacture the same article that the other makes in one half the time and at one half the expense. Now what fate awaits the man with his capital invested in the old process of manufacture? Why the loss of his all, unless the inventor should by a fair and generous bargain allow both to live and make a fair profit, by the manufacturer paying a fair equivalent for the invention.

We have indulged in these remarks because we know, from some circumstances that have lately transpired, that they are needed—and we have presented our views in a free and candid manner. All men in communities are signally indebted to one another, therefore in the spirit of this article we would beseech men to be generous one to another.

Wrought Iron Nails by Machinery.

We have now in our possession some beautiful wrought iron nails made in a machine invented by Mr. S. G. Reynolds, formerly of Bristol, R. I., but now residing in the city of Providence, R. I. We have been informed that the exclusive right of the machine for the United States belongs to a company of gentlemen in Providence and that in a short time a number of machines will be in operation at the Mill of the Providence Iron Co., Fox Point, R. I. A company lately formed in London, named the British and Foreign Nail Company employs Mr. Reynolds's machines, which are highly esteemed.

Spoke Machines.

We have received quite a number of communications giving information, as requested by us, about Spoke Machines.

Mr. Carter, of Newark, New Jersey, owns and sells spoke machines—both a turner and finisher, of Blanchard's patent.

Mr. E. N. Smith, of Springfield, Mass., writes us that spoke machines are plenty in that part of the country of Blanchard's patent. They finish from 200 to 300 per day, and cost about $200, but this depends on the build of the machine, although the principle is Blanchard's

At Dana, Mass., Mr. Allen Goodman has a spoke machine in operation which can work without a model and works well.

Mr. John Kimball, No 43 Tremont Row, Boston, has a spoke and last machine, which he says will turn out 600 spokes in one day, and can turn out 5 or 6 as may be desired, at one operation. We have samples of Mr. Kimball's work sent us from Boston.

Mr. Emerson Goddard, of Petersham, Mass. writes us that his machine is highly esteemed by all who have seen it.

Mr. Lane, of Killingworth, whose invention appeared in the last number of the Scientific American, writes us that Smith Beers, of Naugatuc Connecticut, who was sued at New Haven last April by Blanchard for infringement, when ten of the Jury were for defendant, has a spoke machine that cuts in sections not across, but longitudinally. In September next, we believe, that the cases of Mr. T. Clark of N. H. and Mr. Beers, will be finally tried for the infringement of Blanchard's patent.

Thus we have four different kinds of spoke machines in the country, but which is the best we are not able candidly to give a practical opinion as yet.

We are obliged to our correspondents who have sent us information, and to those also who have called on us personally. Those who desire more information know where to write to the owners and inventors, and we trust they will not neglect to pay the postage.

The Diving Bell.

This apparatus so useful and necessary was invented by Dr. Hally and when first completed, he was one of five persons who were let down to the depth of ten fathoms for about one hour and a half without experiencing any ill effects. It was of the form of a bell, and made so heavy as to sink, but lowered down by a block and tackle from a vessel. He could see to read and write in clear weather, by a window in the bell but could not in stormy weather. It held only as much air as supplied a certain number of persons for a given time. A Mr. Spalding was the next inventor who made some improvements, but Smeaton and Rennie were the first great improvers of the Diving Bell, and their bells continue with very little alteration, to be used at the present day. The old bells of Hally and Spalding were principally supplied with fresh air by means of barrels, but Smeaton and Rennie almost simultaneously applied the air pump to supply by an extra pipe the consumption of oxygen, and since this improvement was made, the diver goes to any depth and remains as long as he chooses, and builds, mines and blasts nearly as well in the water as out of it. The bells now made are of a tapering form, of cast iron and solid on all sides except the bottom, the edge of which is heaviest to prevent the bell from rolling in the act of dipping. In the top there are inserted ten bull's eyes or lights, about 7 inches in diameter. The bell is lowered by chains, which are far better than ropes for this purpose.—The fresh air is introduced at the top, expelling at the same time the vitiated air at the bottom which frequently ascends with a great noise. Attached to the orifice for diverging the fresh air as it enters and of closing itself in the event of an accident to the pipes, which are made like firemen's hose, there is an internal leather valve. Double cylinder air pumps are generally used and it is because the bell is filled with atmospheric air, that the water does not rush in at the open bottom.—As it descends, the increased weight of water above compresses the air and the water flows a little in but can soon be displaced by the air pump. The divers communicate their wishes to those above simply by striking on the bell with a hammer, the number of strokes answering for certain signals. The sound is peculiar and is heard at a great distance. Divers can handle stones under water, with perfect ease, that would require a block and tackle on land. The way blasting is done under water, is to connect the blast to a small tube of a short length and add tube after tube until it reaches the surface, when a piece of hot iron is dropped down and off goes the shot like thunder—the tube shooting like an arrow, but as it is all held together being secure one joint into another and held by a strong cord, it is kept from flying away for further use. A patent was granted in 1826 to a Mr. Steel, of Cambridge College, for an improvement in diving bells, which was to use an artificial light converse with those above and make the condensed air of no inconvenience. His plan, however, promised too much. We perceive that a new diving bell has recently been constructed by Mr. J. A. Richards, of Boston, which has been pronounced to be a very superior apparatus, but we are not able to say what the difference is between it and others but its operations have been highly extolled. We have heard frequent accounts of persons being able to breath as freely in some diving bells as in the open atmosphere, but this is impossible. They must breathe in a condensed atmosphere and the lungs therefore must be more oppressed. Some people have been almost suffocated on their first descent in a diving bell. Others again have thriven like fish in the water, and like Belzoni in the hecatombs of Egypt, become familiar with the operation. Much has already been done by the diving bell, but it is our opinion that submarine apparatus and explorations are as yet but in the stages of childhood.

Velocity of Electricity.

It is not unfrequently a subject of wonder, that the velocity of electricity has been so accurately measured, when its speed is so incredible; and many persons express entire disbelief in the correctness of any such measurement. It has nevertheless been accomplished, and that by a contrivance so ingenious, and yet so simple, as to be within the understanding of a child, and at the same time incapable of committing an error. A small mirror, one inch long, by a half inch broad, is made to revolve on a pivot, and attached to a spring and cog-work, which gives it a swift revolution. It is of course perfectly easy to regulate this velocity to any required number of revolutions per second. Coils of wires, of various lengths, are provided. A coil is taken, say, for example, twenty five miles in length. The two ends of this are brought near each other and fastened on a board, on the flat surface of which is left a break in each end of the wire, so that the passing electricity shall make a spark as it crosses each break. —A Leyden jar is charged, and a spark sent through the coil. To the eye this appears to cross both breaks at the same instant, although there are twenty-five miles of wire between.

The experiment is made in a room which has an arched ceiling, in a precise semicircle, carefully measured and divided into sections. If then this board be so placed that the revolving mirror may reflect the spark, and the (room of course being darkened) mirror be put in motion and the charge sent along the coils of wire, the first break in the wire will be marked by a reflection of the mirror on the arch, and the spark at the second break will be a little further along on the arch. —Thus if the mirror be making one hundred revolutions per second, and the reflections of the two sparks be one eightieth part of the circle distant from another, it is obvious that the mirror has made one eightieth part of a revolution while the electricity was passing twenty-five miles; and the time occupied is of course one eight thousandth part of a second, which would give a velocity of 200,000 miles per second. After repeating the experiments with coils of wire of various lengths, from five to a hundred miles, and finding the distance between the reflections on the arched wall to vary in precisely the same ratio with the lengths of wire, and the final result to be unvarying, it is evident that the problem has been solved, and the velocity of electricity ascertained.

Plate Glass.

BETHANY, (Wager Co) PENN., Aug. 16.

Messrs. Munn & Co.

GENTLEMEN:—In a late No. of your valuable paper, I was pleased to see that PLATE GLASS making is being made the subject of enquiry by a Bostonian. We have the material in abundance, as you very justly remarked—and I would add in Northern Pennsylvania—of a quality not to be surpassed by any thing procured in France or Germany where the article is now made and where the art has arrived at its present state of perfection.—Of workmen in that branch our country is destitute, or if any, they are not known as such. We would therefore be under the necessity of procuring them from a foreign land, and from the present disturbed and deranged state of affairs both in France and Germany, now would be the most favorable time for such an undertaking. Should this branch of mechanic arts be commenced in this country and the mode of casting by machinery as described in No. 30 of the present vol. of the Scientific American, be adopted, I am fully persuaded that an article equally as good as the foreign could be produced and at a price far less and leave a handsome profit for the manufacturer. I hope soon to see it in operation in America. Yours truly,

JOHN SLOAN.

[The Bohemians we believe are the best glass makers. We hope this letter will call the attention of monied men to the subject.—ED.

Arkansas Lands.

We sometime since mentioned that the State of Arkansas was giving away lands, to any person who would settle in that State. The State Government have still half a million acres, which it offers on these terms to immigrants:—Any person designating a lot not exceeding 160 acres of the State lands, to the Auditor of the State, and within 18 months thereafter enclosing five acres, prepared for cultivation, is to be entitled to a deed of the land, at that time. In addition to this, residents and non residents are allowed to purchase these lands, by paying the taxes and costs on the 160 acre lots, which average about $15 each

Engines.

Utica papers say that the Directors of the Steam Woolen Mill in that city, are consulting experienced engine makers, as to whether a high or low pressure engine of 175 horse power is best for their purpose. The low pressure will be found to be the best. Let the directors have plenty of power, never strain the engines or boilers, and they may be sure of economy in every thing connected with the engine.

Unprecedented Demand for Old Papers.

At the commencement of the present volume of the Scientific American we had nearly one thousand complete setts of the preceding volume on hand. Since that time we have had 500 copies of those setts bound, and the balance have been ordered by mail and sent in sheets. We are now obliged to inform our patrons that we are unable any longer to furnish *complete* setts in sheets, and that we have but fifty more copies left, which are bound. The price of the remaining fifty copies which are left will be hereafter $3 per copy (neatly bound,) or we can furnish a few more copies in sheets, minus Nos. 1, 10, 16, 17 and 46, at $2 per sett. All the numbers of the third volume can be had yet, at the subscription price.

THE
SCIENTIFIC AMERICAN.

Persons wishing to subscribe for *this* paper have only to enclose the amount in a letter directed (post paid) to

MUNN & COMPANY,

Publishers of the Scientific American, New York City

TERMS.—$2 a year; ONE DOLLAR IN ADVANCE—the remainder in 6 months

Postmasters are respectfully requested to receive subscriptions for this Paper, to whom a discount of 25 per cent will be allowed.

Any person sending us 4 subscribers for 6 months, shall receive a copy of the paper for the same length of time

© 1848 SCIENTIFIC AMERICIAN, INC

Arts, Manufactures and Machinery.

Wire Drawing.—Tube Drawing—and Iron Rolling.

In this species of Copying there exists but little resemblance. It is the cross section of the thing produced which is similar to the tool through which it passed. When the substances to be operated upon are hard, they frequently pass in succession through several holes, and it is in some cases necessary to anneal them at intervals.

In wire drawing the metal to be converted into wire is made of a cylindrical form and drawn forcibly through circular holes in plates of steel ; at each passage it becomes smaller, and when finished its section at any point is a precise copy of the last hole through which it is passed. Upon the larger kinds of wire fine lines may frequently be traced running longitudinally : these arise from a slight imperfection in the holes of the drawn-plates.

For many purposes of the Arts, wire, the section of which is square or half round, is required : the same method of making it is pursued, except that the holes through which it is drawn are in such cases themselves square, or half round, or of whatever other form the wire is required to be.

A species of wire is made, the section of which resembles a star with from six to twelve rays, this is called pinion wire, and is used by the clock-makers. They file away all the rays, from a short piece, except from about half an inch near one end : this becomes a pinion wire for a clock, and the leavers having passed through the draw-plate are already burnished and finished.

The Art of forming tubes of uniform diameter is nearly similar in its mode of execution to wire drawing. After the sheet-brass has been bent round and soldered, if the outside diameter is that which is required to be uniform, it is drawn through a succession of holes, as in wire-drawing. If the inside diameter is to be uniform, a succession of steel cylinders, called triblets, are drawn through the brass tube.

In making tubes for telescopes it is necessary that both the inside and outside should be uniform. A steel triblet is passed into the tube, which is then drawn through a succession of holes, until the outside diameter is reduced to the required size. The metal of which the tube is formed, is condensed between the holes and the steel cylinder within it; and when the latter is withdrawn the internal surface appears polished. The brass tube is considerably extended by this process sometimes even to double its first length.

Leaden pipes for the conveyance of water were formerly made by casting ; but it has been found that they can be made both cheaper and better by drawing them through holes in the manner of wire. A cylinder of lead of five or six inches in diameter, and about two feet in length is forced into a hole. It is then drawn through a series of holes until the lead has extended from one end to the other of the triblet, and is of the proper thickness in proportion to the size of the pipe.

When cylinders of iron, of greater thickness than wire, are required, they are formed by passing wrought iron between rollers each of which has sunk in it a semicylindrical groove ; and as such rollers rarely touch accurately in iron so manufactured, a longditudinal line will usually be observed. Bar iron is manufactured in this way into all the various shapes of round, square, half-round, oval, &c. in which it occurs in commerce. It is sometimes required that the iron thus produced shall not be of uniform thickness throughout. This is the case in rolling iron for rail-roads, for which purpose greater depth is required towards the middle of the rail which is at the greatest distance from the supports. This is accomplished by cutting the groove in the rollers deeper at those parts wherein additional strength is required; so that the hollow which surrounds the roller would, if it could be unwound, be a mould of the shape the iron is intended to fit.

A rainbow was lately seen by moonlight at Coburgh in Canada.

For the Scientific American.

Light Houses.

The great care of a maritime nation should be " the protection of her shipping and the safety of her hearts of oak—her vessels and sailors." The greatest maritime state that ever has existed is England, and next to her in greatness is the United States. Long has England been aware of her fitness and position to " rule the waves," and wisely has she cultivated her commercial relations, and fostered her navy. No better evidence can be adduced for her zeal in the care of her mariners, than the assylums she has provided for the old and disabled, and the wealth and skill she has lavished to make stormy and dangerous coasts safe refuges to her tempest driven barks. Nothing is so fraught with danger to the storm-tossed mariner, as a sunken reef in a channel or mouth of a harbor. There is not a year passes over our heads but hundreds of lives are lost and many noble vessels dashed to pieces owing to the impossibility of navigators to distinguish the exact position of a sunken rock or reef, for want of suitable signals of danger. In our country, the coral reefs of Florida are strewn with the bleached bones of thousands of our brave seamen, and there are many " dangerous rocks unseen," on other parts of our coast beside that of our Peninsular State. There can be no doubt, but we will yet be the greatest maritime as well as the greatest civil empire on the face of the earth. It therefore becomes us to provide for the safety of our navy in which so much of our national wealth is invested and on which so much of our country's prosperity depends. At an early date lights kindled on dangerous parts of coasts were used to warn the sailor of his danger, yet the most dangerous rocks to seamen were those on which no lights could be kindled. Lighthouses are of ancient date—they were known both to the Phœnicians and Greeks, but above all nations Britain has distinguished herself in the erection of the Eddystone and Bell Rock Lighthouses on sunken reefs, and lately by the erection of the Skerrivore Lighthouse.

Almost every person has heard of the Eddystone lighthouse erected by the ingenious Smeaton in the English Channel, and of the Bell Rock lighthouse erected on a sunken rock about 11 miles out from the north coast of Scotland by Stevenson. It may be said that Smeaton deserves the greatest honor, as he was the first successful builder, but Stevenson is also entitled to distinction and fame. The Eddystone lighthouse is 70 feet above the level of the water, and the Bell Rock 100 feet. The difficulties to be overcome in building these lighthouses were overwhelming, but the ingenious architects triumphed over every difficulty and their works have stood for half a century nearly, as noble monuments of skill and ingenuity. The Skerrivore lighthouse, which was completed a few years ago, by a son of Mr. Stevenson the builder of the Bell Rock, is another monument of skill and daring, not surpassed by either of the two former. It is built on a sunken reef on the west coast of Scotland, between Ireland and it, and is open to the Atlantic. This new lighthouse has cost nearly one million of dollars to erect it, and it was nearly 6 years in the course of construction. It is twice the height of the Eddystone lighthouse and every course of stones had to be prepared in wooden models on the neighboring coast. This lighthouse is exposed to the most fierce and overwhelming tempests coming sweeping in from the broad Atlantic. On occasion during the erection of the building, a storm lasted for 14 days, during which a steamer built for the very purpose was unable to approach the rock In the erection of this lighthouse, the engineer was assisted by advantages of modern science, which Smeaton and his father knew nothing about. This was blasting by the galvanic battery, and a steamboat which could be managed during all kind of winds. Mr. Stevenson has lately published a splendid work on lighthouses in which a full and interesting description of the Skerrivore is given. I perceive by your valuable London correspondence that a gentleman in England has lately proposed to have the windows of the lanterns in all lighthouses made with illuminated letters. This it a good improvement and will no doubt be carried out. Considering our extent of coast and its dangers, we as a nation have been rather penurious in lighthouse and other marine improvements This should not be, if we wish to foster our naval strength and it is our great policy to do this. I trust that the foregoing sketch will at least stimulate and direct attention to our commercial prosperity and maritime necessities.

For the Scientific American.

To Calculate the Power required to raise Water.

The power required to raise water any height is equal to the quantity of water discharged in a given time and the perpendicular height.

Required the power necessary to discharge 200 gallons per minute 100 feet high ?

One gallon is about 10 1-4 lbs., therefore—
200X10 1-4=2050X100=205000

$\frac{\quad}{\quad}$=6 7-33 horse power.
Divided by a horse power 33000

What is the quantity of water discharged from a pipe of a given diameter up a certain perpendicular height, and the water flowing at a certain rate per minute ?

Rule —Square the diameter of the pipe in inches and the product will be the number of pounds in each yard length of the pipe. If the last figure of the product be cut off or considered a decimal, the remaining figures will give the number of gallons in each yard of pipe, and if the product contains only one figure it will be the tenths of a gallon. The number of gallons multiplied by 282, the cubic inches in a gallon, gives the cubic inches in each yard of pipe and the contents may be found by proportion.

What quantity of water will be discharged from a pipe 6 inches diameter, 200 feet perpendicular height and the water flowing at the rate of 150 feet per minute ?

6X6=36X150=5400

$\frac{\quad}{3}$=1800 or 180 gallons per minute.

6X6=36X200=7200

$\frac{\quad}{3}$=2400 lbs. of water in the pipe.

2400 then is the weight of water in the pipe, and 150 feet flow per minute, then 2400 x 150=360000

$\frac{\quad}{33000}$=10 1-11 horse power.

There are some authors who state that there are only 10 lbs. of water in a gallon.—It is certain that 10 1-4 lbs. is a little more than the correct weight, and 10 lbs. a little less.

Another Rotary Engine.

To the Editor of the Sci. American.

The following statement of the performance of a rotary engine, which I have now in operation, would perhaps be interesting to many of your readers and particularly so to those who have devoted their talents to the improvement of steam machinery.

I have a rotary steam engine in use 20 miles north of Nashville, Tennessee. It is propelling a saw which cuts upon the average 2000 feet per 12 hours. The steam made use of is generated in a cylinder boiler only twenty feet long and 32 inches diameter. The fuel consumed is furnished in full by the slabs and sawdust produced by the mill.

In burning one cord of dry wood the mill yields one cord and a half of slabs I generally burn sawdust from two o'clock till night —it produces a surplus of steam by burning it unmixed with any other fuel

My engine is so constructed as to use steam both by pressure and expansion, and to obviate all reciprocating motion, working valves of every description are dispensed with. Its rubbing surfaces are few, and of small extent, and so arranged as to be easily adjusted. The steam acts upon a pair of cast iron cog-wheels the teeth of which have the true epicycloid formation. A simple steam box, composed of one cap piece and two cheek piecs, fastened together with bolts and fitted to the wheels embracing a small portion of their surface, receives the steam from the throttle and confines it between the wheels, so as to act immediately upon the face of the cogs, and drive the wheels in contrary directions. The steam after it has ceased to act may be taken from the space between the teeth before it escapes and conveyed to another pair of wheels and thus obtain, by a second action, the maximum effect of its expansive force.

I invented this engine and obtained a patent for it in the Fall of '42, and have since been experimenting with it until success has crowned my efforts. In the Fall of '42 I employed R. M Hoe & Co. of New York, to make a small engine for me. It was tried at their shop for two or three days and exhibited very considerable power. I have, since then, succeeded in properly proportioning all its parts and contriving facilities for assisting the steam joints, and maintaining them in working order.

My mill has been in operation about fifty days and has sawed about 96,000 feet. The engine continues to run well and exhibits no signs whatever of wearing. Its wheels are only 10 inches diameter, and 10 inches face, and they perform about 220 revolutions per minute. J. A. Stewart.

Tyree's Springs, Sumner Co. Tenn.

For the Scientific American.

Poisons and their Antidotes.

The vapor of mercury is well known to be poisonous and many diseases follow those who work in the quicksilver mines and those whose occupation leads them to use mercury in the arts, such as gilding, &c. On some occasions quicksilver taken internally, has also proved a poison. There seems to be no remedy, but in a complete change in diet, labor, a due care of the body to protect it from the inclement exposure and a change of habits so far as this possibly can be.

ARSENIC.

Next to Prussic acid, this is the worst of all poisons, and it is a poison which has been productive of misery and woe in the hands of the cruel and malicious. It has often been taken in mistake. The preparations of it are the white oxide, the arsenical acid, the arsenites, the arsenates, the red and yellow sulphurets and the black oxide, and vapor. The white arsenic or arsenious acid is the most common. White arsenic acts both externally and internally and causes death in a short time.

The exact mode in which it operates on life, is not well agreed on, but the general symptoms produced are the following : An austere taste, with spitting constriction of the throat, grinding of the teeth, hiccup, nausea, and vomiting, the matters being brown or bloody. Then anxiety, fainting, burning heat in the stomach, and black evacuations. The pulse is small, frequent, irregular, sometimes slow and intermittent, with a burning heat over the body, and an inward sense of the same ; yet occasionally there is a feeling of icy cold. Palpitations, thirst, fainting, difficulty of respiration, cold sweats, dysuria, or bloody urine, may be added to these The physiognomy is affected, presenting a lucid circle round the eyes ; the body swells, and is covered with a red eruption, and, to complete this frightful list, we may add prostrations of strength, delirium, convulsions, priapism, loss of hair and epidermis, and finally death. It is true, however, that, many of these effects are not present in one patient; and sometimes death has been produced without any other symptom than previous faintings.

TREATMENT OF THE PATIENT.

No chemical substance yet tried is an antidote to arsenic in its solid state. All solutions are rendered inert by the hydrosulphurets ; but the poison is so rarely given in this form, that these are of no practical use.

The first part of the treatment is to expel the poison by vomiting, to which may be added, tickling the throat by means of a feather. This alone has sometimes proved successful. In all cases, the fuller the stomach is of any fluid, the less violent are the effects of this poison. The metalic emetics only add to the mischief. Oils and fat substances are injurious, as has been fully proved by experiments on animals. In the liquid state of the poison, lime water may be useful, but not in the solid.

Omnibusses in New York.

There are about 400 omnibuses in this city carrying, on an average, 64,000 passengers each day. The receipts in the aggregate, amount to more than $3,000 per diem, or $20,000 a week, making a total of $1,000,000 and upwards per annum.

© 1848 SCIENTIFIC AMERICIAN, INC

TO CORRESPONDENTS.

In reply to a number of letters now on our table we would say, that we have probably better facilities for taking out patents than any others in this country possess. Those who intend securing an invention by patent will save themselves a deal of trouble and money by applying to us.

" L. W. of Mass."—The Suspenders you describe are not new. We have seen a similar arrangement long since.

" S G. H. of N. H."—An engine and boiler complete of 50 horse power will be about $5000. The saws you mention, fitted up, about $1500, the planing machine $1200. We can furnish you with any machinery you desire probably cheaper than any one.

" P. C. H. of La."—Yes, we will take any kind of Southern money that is current with you.

" J. M. T. of Mass."—The best receipts of Japan varnishes, are to be found in the back numbers of the Scientific American, also descriptions of the art of painting in vol. 2. For the manufacture of paints, see Ure, Davy and Fields.

" C. D. V. of Pa."—We have seen a plan of a boat to be propelled up stream by the motion of the current. The inventor said he had tried it and it proved successful, but it was never brought to any practical purpose. We think such a boat can be made.

" J. M. of Pa."—We cannot advise you to secure a patent on either of the inventions you describe. Your trouble and money would be thrown away. Some plan for the solid compression of butter would be better for extracting its impurities than your method, which grinds it up too much. Your plan for Wagon Reaches is good, but not, in our opinion, worth patenting.

" C. S. of Wisconsin."—We could not recommend you to incur much expence for such a small quantity of water as 600 inches under 2 feet fall. The power is too small, but might be used with a reaction wheel for churning and such like small jobs. Make your own wheel, if you use an undershot. This you can do easily.

" S. W. of Mass."—We have credited the $2 to your subscription. The stearic acid is the subject of a patent and cannot be obtained, nor used but by the purchase of the same. The discoverer has been in this city. In Morfitt's Applied Chemistry you will find a full and complete description. The substance to use for the cards is a paste of fine glue and French white, and the gloss communicated by smooth metallic friction rollers pressing the paper. This is the way to make satin paper also.

" T. S. of Vermont."—J. T. Foster and L. R. Bailey of New York City, are the inventors of the rock drilling machine. The price of a machine we believe, is $150.

" T. T. of Mass. "—We have seen a hollow augur in operation, and believe that it is secured by a patent to a mechanic in Michigan. It was exhibited in this city last year. It is not possible to sell any machine now unless it is patented without a practical demonstration of its superiority.

" J. D. of Penn "—We shall attend to your communication next week, but want some description of the machine along with so much in its favor—some idea of what it is, for others to judge.

" S. U. L. of N. Y."—When you subscribe we will answer.

" S. C. P. of Mass."—The animalculæ in water, are no more component parts of water, than birds are component parts of the atmosphere. The smallest moth that dances in the sunbeam, is as distinctly a separate part of animated nature, as the unwieldly elephant. In regard to your other interrogatories, we would say that we have received quite a number of the same nature which we have not deemed important enough to answer. Lardner's explanation of latitude and longitude is very plain.

" C. L of Ct."—The Glasgow Mechanic's Magazine was sold before your letter came to hand.

All communications must have signatures, or no attention will be paid to them.

Premium Tract.

The Association for improving the condition of the Poor desiring a tract calculated to promote provident habits, economy and good management among the laboring classes,—has authorized a gentleman to offer, for the best production on that subject, a premium of fifty dollars. It should have prominently in view the fluctuations in the demand for manual and mechanical labour, at different seasons, in large cities, and not exceed 12 pages 12 mo. A narrative tract, in simple style, will have the preference.

Manuscripts will be received by R. M. Hartly No, 160 Grand st., this City, until the first of November. The writer must send his name in an envelope.

Union Magazine.

The September number of this monthly is received. It contains two superb steel engravings, a fashion plate, an original piece of music, and two other well executed wood engravings. Published at 140 Nassau st., James L. De Graw, agent.

Advertisements.

☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

Advertisements are inserted in this paper at the following rates :

One square, of eight lines	one insertion,	$ 0 50
" " " "	two do.	75
" " " "	three do.,	1 00
" " " "	one month,	1 25
" " " "	three do.,	3 75
" " " "	six do.,	7 50
" " " "	twelve do.,	1500

TERMS:—CASH IN ADVANCE.

GENERAL AGENTS
FOR THE SCIENTIFIC AMERICAN.

New York City, - Geo. Dexter.
Boston, - - - Messrs. Hotchkiss & Co.
Philadelphia, - - Stokes & Brother.

LOCAL AGENTS.

Albany, - - - - Peter Cook.
Andover, Mass. - - E. A. Russell.
Baltimore, Md., - - - S. Sands.
Bermuda Islands - Washington & Co.
Cabotville, Mass., E. F. Brown.
Concord, N. H. Rufus Merrell.
Dover. N. H. - - D. L. Norris.
Fall River, Mass. - Pope & Chace
Hartford, Ct., - - - E. H. Bowers.
Houston, Texas, - J. W. Copes & Co.
Jamestown, N. Y. - E. Bishop.
Lynn, Mass, - - J. E. F. Marsh.
Middletown, Ct., - - Wm. Woodward
Norwich, Ct., - - - Safford & Parks.
New Haven, Ct., - - E. Downes.
New Bedford, Mass., - S. F. Hoyt.
Newburg, N. Y. - S. A. White.
Newark, N. J., - - J. L Agens.
Newark, N. J - - Robert Kashaw.
New Orleans, La. - J. C. Morgan.
Providence, R. I., - - H. & J. S. Rowe.
Rochester, N. Y. - D. M. Dewey.
Springfield, Mass., - - Wm. B. Brocket.
Salem, Mass., - - - L. Chandler.
Saco, Me., - - - - Isaac Crooker.
Savannah, Geo - John Caruthers.
Syracuse, N. Y. - - W. L. Palmer.
Troy, N. Y., - - - A. Smith.
Taunton, Mass., - - W. P. Seaver.
Utica, N. Y. - - W. H. Canniff.
Williamsburgh, - - J. C. Gander.
Webster, Mass. - - J. M. Shumway.

CITY CARRIERS.

Clark Selleck, Squire Selleck.

Persons residing in the city or Brooklyn, can have the paper left at their residences regularly, by sending their address to the office, 128 Fulton st., 2d floor.

Fraud

Washington Shielded Spring Diaper Pins.

Caution to the public and dealers generally.

WHEREAS a certain individual has undertaken to manufacture my Patent Spring Diaper Pins—this is to caution all persons not to purchase them of him or any person he may employ. as any dealer vending the same will be liable to a fine of one hundred dollars for each offence It is understood that the said individual intends to persuade persons to purchase by pretending to become responsible for all damages. Dealers are cautioned against all such pretences. The genuine Pins will always be stamped with the words " Rabbeth's Patent," on the back of each. J. RABBETH,
au26 2t* Glastenbury, Connecticut.

A Twelve Horse Steam Engine and Locomotive Boiler for one half their cost.

BOTH the above are of the very best kind, nearly new and in perfect running order. Their cost when new was $1600. The engine is a horizontal one, of simple construction, and is a splendid piece of work. The boiler is of the heaviest wrought iron made in the very best manner, and with proper care will be warranted to last for 10 years. The cost of fuel is 40 cents per day. The above are now offered for sale to close a concern for $800, cash. It is an opportunity seldom met with. They may be sent with perfect safety to any part of the United States, and if desired, an engineer will accompany and put them in operation. Apply to
MUNN & CO.,
Scientific American Office, New York.
Letters must be post paid. au19 tf

Judson's Stave Dressing Machine.

THIS Machine, on which Letters Patent were granted May 1st, 1847, has been in successful operation for the past year, and hundreds of thousands of staves have been dressed by it. It is warranted to dress the same quantity of staves with as little power as any that can be started, also leave the full thickness on thin edges and thin ends, and conform as near to the crooks and twists of the timber as can be desired. The jointing of the machine which accompanies it, has been subjected to the severest test, and pronounced superior to that performed by hand. Application for a patent on the Jointer has been made.

Large quantities of Hogsheads and Shooks made with staves dressed and jointed with their machines have been sold and used to the entire satisfaction of the purchasers.

For rights and machines address the proprietors st their Manufactory, Artizan street, New Haven, Connecticut, where machines in full operation may be seen. JUDSON & PARDEE.
New Haven, July 17, 1748. jy29 3m*

To Cotton Manufacturers.

THE Subscriber will furnish Cotton Manufacturers with his improved Cotton Willow. The fact of its being introduced into most of the best mills in New England is the best proof of its excellence. It is extremely simple in its construction and will do more and better work with a less expenditure of power than any other Willow ; it prepares the cotton so much better than any other that there is much less power and repairs needed on the succeeding machinery. It is as safe from fire as a Card, and its form and action are such as to draw all the flyings and dirt from the journals ; it will convey the cotton to any desirable distance short of 250 feet. It can be placed in the basement of a mill or other place nearly worthless for other manufacturing purposes, and will blow the cotton into the rooms above. All necessary information given for placing and operating the machine in any peculiar or difficult situation. EDMUND BACON,
Superintendent Quinebaug Manufacturing Co.
j24 tf Norwich, Conn.

Patent Agency.

THE undersigned having established permanent agencies in England, Ireland, Scotland, France and Belgium (with the leading manufacturers and inventors of which countries he is personally acquainted), is enabled to transact all business entrusted to his care with perfect safety and dispatch ; and such is the integrity, energy and legal ability of our agents, that the patentee is, in ninety-nine cases out of a hundred, sure to reap a rich harvest from any invention which passes through our hands.

Since the first of March last we have sold three patents in Great Britain for $17,580, and five in France for 38,000 francs.

For integrity, the undersigned refers to :—Horace Greeley, Esq. Tribune Buildings, New York.
CLINTON G. GILROY,

All letters must be post paid, and addressed to Clinton G. Gilroy, 71 Nassau st. New York. jy1 3m*

TAFT'S PREMIUM LETTER COPYING PRESS.

THE Subscriber continues to manufacture his Premium Letter Presses, at Worcester, Mass., and respectfully informs his friends and the trade generally, that he keeps constantly on hand a large assortment, which he offers for sale at reduced prices. Orders by mail will be promptly attended to
GEO. C. TAFT,
Worcester, Mass., April 11, 1848. au5 tf

T. J. WELLS,

MILLWRIGHT AND MACHINIST,

Foot of 29th Street, N. R. New York.

Manufacturer of all kinds of Saw Mill Machinery, such as Straight Saws with Carriage Veneer, Scroll, Slitting, Circular, &c. ; also, Shafting, Gearing and other machikery,

My Patent Improved Slitting Saw Mill, for slitting Boards, Plank, &c., may be seen in operation at the above—where all Planing, Sawing and Turning is done in the best manner and on the most reasonable terms. au12 4t

Telescope for Sale.

A good 66 inch Reflector, 5 inch aperture, of good construction, with Equatorial Stand, Eight eye pieces and Micrometer. For sale cheap, by
a26 1t* G. D. HISCOX, 31 Jay st. N. Y.

PREMIUM SLIDE LATHE.

THE subscriber is constantly building his improved Lathes of all sizes, from 7 to 30 feet long, and can execute orders at short notice.
JAMES T. PERKINS,
Hudson Machine Shop and Iron Works,
m11 Hudson, N. Y.

Coal.

THE Subscriber has constantly for sale by the cargo or ton all sizes of Coal for Manufacturers and Families, from the best Schuylkill and Lehigh mines. Hazleton and Spring Mountain, lump and steamboat Coal. Tamaqua Chesnut for engines.—Peach Orchard and other red ash Coal. Midlothian, Virginia, a superior article for smith's use. Cumberland, Sidney and Liverpool Coal. For sale at the lowest market prices. J. P. OSTROM,
au5 3m* corner 10th Avenue and 26th st.

PREMIUM SLIDE LATHES, Planing, Drilling, Bolt and Geer Cutting Machines generally on hand and made to order at No. 42 Gold st. New York.

All tools made at this establishment are warranted to give perfect satisfaction, as no pains are spared to make them perfect in finish, style and workmanship, and having many and decided improvements are capable of doing more and better work than tools generally offered to the trade.
au19 1m G. B. HARTSON.

GATCHELL'S IMPROVED PREMIUM HYDRAULIC RAMS.

Patented April 10th, 1848.

☞ These Machines of all sizes, are to be had of Messrs. TATHAM & BRO'S., 249 Water st., New York.

For Rights to different States, Counties, &c. address JAMES RICE, Agent.
au19 3t* New York City.

STEAM BOILER.

BENTLEY'S Patent Tubular and other Boilers of any size, shape or power, made to order, by
SAMUEL C. HILLS & CO.
au8 43 Fulton st.

Lap welded Wrought Iron Tubes

FOR TUBULAR BOILERS,

From 1 1-4 to 6 inches diameter, and any length, not exceeding 17 feet.

THESE Tubes are of the same quality and manufacture as those extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER, Patentee,
d26 28 Platt street, New York

Johnson's Improved Shingle Machine.

THE Subscriber having received Letter Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighen more shingles can be sawed in the same given time than by any other machine now in use.
Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.

GENERAL PATENT AGENCY.

REMOVED.

THE SUBSCRIBER has removed his Patent Agency from 189 Water to 43 Fulton street.

The object of this Agency is to enable inventors to realize something for their inventions, either by the sale of Patent Goods or Patent Rights.

Charges moderate, and no charge will be made until the inventor realizes something from his invention.

Letters Patent will be secured upon moderate terms. Applications can be made to the undersigned, personally or by letter post paid.
au8 SAMUEL C. HILLS, Patent Agent.

Johnson & Robbins,

Consulting Engineers and Counsellors for Patentees.

Office on F street, opposite Patent Office, Washington, D.C. j17 tf

☞ The above is prepared to execute all orders at the shortest notice and on the most reasonable terms.

To Mill Owners.

HAVILAND & TUTTLE'S Patent Centre Vent Pressure Water Wheel.—These wheels are now in successful operation in many towns in Maine, Massachusetts, and Rhode Island, and are found to surpass in power and facility of adaptation any water wheel now in use. This wheel was awarded the silver medal at the Fair of the American Institute recently held in New York and a diploma at the Mechanics' Fair in Boston.

The wheels are manufactured and for sale by the FULTON IRON FOUNDRY CO., South Boston, Mass.,—where the wheels can be seen and any information cencerning them had.

Patent Rights for different States, Counties, &c. for sale, as above. m25 6m*

Machinery.

PERSONS residing in any part of the United States who are in want of Machines Engines. Lathes or any description of machinery, can have their orders promptly executed by addressing the Publishers of this paper. From an extensive acquaintance among the principal machinists and a long acperience in mechanical matters they have uncommon facilities for the selection of the best machinery and will faithfully attend to any business entrusted to their care MUNN & CO. a15

LAW'S

STAVE DRESSER AND JOINTER.

THE undersigned has perfected and put into very successful operation his Stave Machine.

It will **Dress** and **Joint** Staves of all shapes, kinds and dimensions, and of promiscuous widths, as they come from a mixed pile, at the rate of from 6 to 8 staves per minute, finishing them, before they leave the machine, ready for the truss hoop. They are both dressed and jointed very smoothly and handsomely, bringing each stave of equal width at the two ends without waste of stock and perfectly to correspond with every twist or crook, and with as little power in proportion to the work done, as any other machine.

For rights (which are indisputable,) or machines address, post paid.
H. LAW, Wilmington, N. C.

N. B A machine will be in operation in New York or vicinity, in the course of the ensuing month.
jy15 2m

Stave Dressing Machine.

THE undersigned are manufacturing and have now in operation, a machine for **Dressing Hived Staves,** which will dress 126 hogshead or 170 barrel staves per hour, with one horse power, and with two horses will double the number.

It will dress crooked and winding staves to perfection, and leave the full thickness on those with thin edge, a desideratum worthy of attention.

The machine is simple, compact and durable, and has received the approval of every practical Cooper that has witnessed its operations. We warrant it to perform fully equal to our representation and shall be pleased to exhibit it to all who may favor us with a call. For further description and terms, apply to
WM. & E. T. FITCH, 2d., New Haven, Conn., or
GEO. GILBERT, Westville, N. H. Co., Conn.
j3 3m*

TALBOT'S PATENT REVOLVING BLIND HINGE.

Important to Builders and others.

THESE Hinges are for opening, closing, locking and completely regulating the blind upon the interior of the house without raising the sash. They are adapted to any kind of house, or style of finish. All communications, whether for the purchase of the article, or of Town, County or State rights, addressed to the subscriber, or to J. W. Ingell & Co., Taunton, Mass., will be promptly and satisfactorily attended to.
j3tf L T. TALBOT, Taunton, Mass.

Agricultural Implements.

☞ Inventors and Manufacturers of superior Agricultural Impiements may find customers for their goods by applying at the Agricultural Warehouse of S. C. HILLS & CO. 43 Fulton st. au8

© 1848 SCIENTIFIC AMERICIAN, INC

For the Scientific American.

Rules for the Recovery of the Apparent Drowned.

At this season of the year, when there are cases occurring, almost daily, of persons being drowned from incautiously venturing to bathe in places where they are unacquainted with the depth of water, we think it may be useful to insert some rules for the recovery of the apparent drowned. It is a dangerous opinion to suppose, because animation is apparently suspended, that life is irrecoverably gone. Although there are no instances of persons having been recovered who had been more than three quarters of an hour in the water, yet there are numerous instances of persons having been restored to life and health, and notwithstanding the great acquisitions made in medical science at this day, it cannot be said that we have yet obtained an infallible test of death, not even excepting putrefaction; indeed it is better that it is so, as it would be inhuman to give up any person for dead, (whether suffocated by water, hanging, freezing, or syncope,) upon the application of any test, before every remedy had been used and proved ineffectual for their resuscitation. We recommend the following rules to be observed promptly :—

Convey carefully the body, with the head raised, to the nearest convenient house.

Strip and dry the body; clean the mouth and nostrils.

Put young children between two persons in a warm bed.

An adult. Lay the body on a blanket or bed, in a warm chamber in winter; to be exposed to the sun in summer.

It is to be gently rubbed with flannel sprinkled with spirits, a heated warming pan, covered, lightly moved over the back and spine.

To restore breathing—introduce the pipe of a pair of bellows (when no other apparatus is at hand,) into one nostril; the other, with mouth, closed; inflate the lungs till the breast be a little raised; the mouth and nostrils must then be let free: repeat this process till life appears.

The breast to be fomented with hot spirits, if no signs of life appear, the warm bath, or hot bricks, &c. applied to the palms of the hands, and soles of the feet. Or put the feet in warm water, as hot as the hand will bear it, where a warm bath cannot be had.

The Medical Assistants have always considered throwing tobacco up the fundament, as an essential part of the process in cases of suspended animation.

It is the admission of a kindly warmth into the internal parts, which, in all cases, must prove advantageous.

Its stimulus, connected with this warmth, seems admirably adapted to excite irritability, and to restore the peristaltic motion of the intestines.

Experience and observation have proved that animation being excited in one part, the whole will be often brought into motion, and vital action restored; such is the general sympathy of an animated body.

Powder, for Rendering Iron Malleable, and Cleaning it from Sulphur, Phosphorus, and Arsenic.

Schafhæutl's method of rendering iron malleable, and cleaning it from sulphur, phosphorus, and arsenic, in some parts of Germany, has been employed with tolerable success, and produced favorable results. The method in itself is simple, and the theory appears to be more practical than such experiments in general prove. This powder consists of 1 3-4 lb. of the peroxide of manganese, 3 3-4 lbs. of common salt, and 10 ozs. of potter's clay—the clay and the common salt are the most important elements. By the heat of the puddle oven, the salt mixed with the clay is decomposed. The natrium, either on account of the air, or the peroxide of manganese, attaches itself to the oxygen, and changes to natron, which with the argillaceous and quartzose earth, forms itself into a silicate, or aluminate, of natron, and goes in the slag. The peroxide of manganese loses a great quantity of its oxygen, and forms itself as oxyde of manganese with the silicious earth (from the silicum of the pig iron) to a silicate, and prevents the loss of the metal. This free chlorine, which, with constant stirring is brought to bear on the mass, attaches itself to the sulphur, phosphorus or arsenic, and makes combinations, which are carried out of the furnace through the grate. From this it will be seen, that this method not only cleanses the iron, but shortens considerably the process of rendering it malleable. The quantity of peroxide of manganese can be considerably diminished, when it is worked in oped hearths, as in some places in Germany. It was endeavoured to introduce this method of iron smelting by cupola furnaces, but, on account of various reasons, it could not be carried into execution. It was proposed to employ sal-ammoniac instead of salt; the chlorine in sal-ammoniac is double the quantity of that contained in an equal weight of salt. No clay is required, it does not increase the slags, and the quantity of hydrogen gas in sal-ammoniac (7 or 8 per cent.) contributes much to the cleansing of the iron.

Incombustible Wash.

Take some powdered flint and sprinkle it into a crucible containing equal parts of the dry carbonate of potash and the dry carbonate of soda as long as there is any effervesence. It will generally take about a quarter as much powdered flint as there is of alkali. Let the mass cool. Then dissolve it in diluted muriatic acid. Strain it, and evaporate to dryness. Take the dry crust and pulverise it, and again digest it about two hours with a little muriatic acid, to dissolve out any iron or alumina—then wash it with hot water—drain it—dry it, and heat it hot. This makes the soluble glass, which will dissolve in water, and which may be applied to cloths and paper, wood and leather, &c, and will render them incapable of taking fire when placed in contact with a burning body. It is not a very difficult process for *one* correspondent to perform, and if it should meet his wishes, we shall be very much gratified.

Wood and other substances may be rendered somewhat incombustible by being soaked in a solution of alum.

A Glaze for Earthenware.

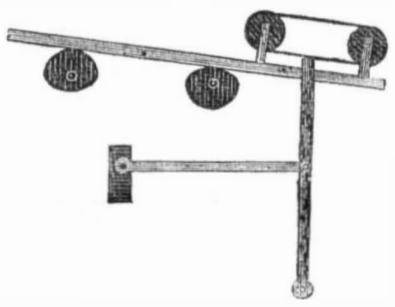
This glaze consists of borax, felspar, and clay, or brick-earth. The borax is taken just as it occurs in commerce, stamped fine, and passed through a sieve. The felspar employed in its purity or whiteness: it is merely washed in water, then heated red-hot in the strongest fire of an earthenware kiln and stamped. The loam or brick-earth, is sifted, and also heated to redness, until it has acquired a reddish color. The proportions are 100 lbs. of the borax, 50 lbs. of felspar, and 50 lbs. of clay, carefully mixed in a proper vessel. Meantime several cases of fire-clay are made, and these are coated inside and at the bottom half an inch thick with pulverized quartz flint which has been previously heated to redness, to render it more easily reducible to powder, upon which it is mixed with water so as to form thick paste), in order that the fused glass may not adhere, and may be easily removed.

The filled cases are exposed to the strongest heat of the kiln, when the mass runs to a glass. This glaze is then diluted with water, and applied in the usual manner. Owing to the quantity of borax that enters into the composition of the above, and the necessary combination of the glaze, it becomes very expensive; this evil has been in a great measure overcome, by employing a mixture in which the borax is dispensed with. It consists of 100 parts silica (washed sand), 80 parts purified potash, ten parts nitre, and 20 parts caustic lime moistened with water (hydrate of lime.) The constituents are well mixed and melted in a graphite crucible, or in a reverberatory furnace, until the mass flows to a clean glass. During the melting it must be frequently stirred, as in the commencement it puffs up considerably owing to the disengagement of the carbonic acid; the fused mass is poured out on clean iron plates, and when cooled, ground to a fine powder.

The objects to be glazed, are first slightly burnt, and then placed under water, and the powder sifted uniformly over them. They are now dried in the air, and the glaze burnt in the kiln in the usual way; this glaze resists acids nearly as well as glass, and may also be coloured by the addition of smalt, or other metallic oxides.

MECHANICAL MOVEMENTS.

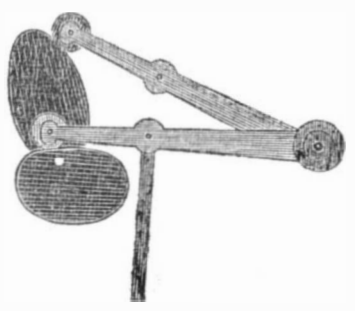
Dressing Movements.



This is a plan for brushing warps similar to the one we have heretofore presented in the Scientific American, and exhibits the way in which the contact of the brushes is effected by the cam pieces beneath the larger lever, while the brushing action is given by the perpendicular lever from below. The dressing machines at present in use employ a different motion for dressing the warp from the one represented here.

Our engraver has left out the brushes which should have been shown, one on the upper part of the revolving web, and the other on the line below.

Alternate Rectilinear Motion.



This cut shows how alternate rectilinear motion may be produced in treadles by the circular motion of the cams. Cams and eccentrics are generally employed to produce irregular motion in parts of machinery with which they are connected. The above shows the application to work the treadles of a power loom. The treadles have an alternate up and down motion. This explains the principle of the motion, but the mechanical contrivance is a little different.

Wool Mattress.

The first thing to constitute a good healthy bed is, that it must be absolutely flat, therefore all bedsteads should have wooden laths instead of sacking, which always gives and forms a hollow; the wool is carded by hand, and all knots and extraneous matter taken out; the great point is to make it thick enough. The covering is washed once a year; the wool is carded and a few pounds of wool added, and the bed is sweet and new. However luxurious he may be, let any gentleman have a good wool mattress made, and let him ride forty or fifty miles and throughly fatigue himself, he will then know the value of such a bed. Forty lbs. make a good mattress. This ought to be promulgated to increase the consumption of the wool, and such wool as cannot be sold abroad. Independant of the benefit to all in their health who adopt wool mattresses on account of their cleanliness and durability, in the end, they are cheaper than any other bedding.

Paintings.

Many valuable paintings suffer decay, from the attacks of a microscopic insect of the mite class. The best method of preventing this species of decay, is to add a few drops of creosote to the paste and glue used to line the picture, as well as to make a similar addition to the varnish. If it has already commenced, the painting should be at once carefully cleaned and relined, observing to employ a little creosote in the way just mentioned. Paintings should be kept in as pure an atmosphere as possible, and in a moderately dry situation; as it is the presence of sulphurated hydrogen in the air that blackens the "lights," and causes most of the middle tints and shades to fade; and it is exposure to damp that produces mouldiness and decay of the canvas. For this reason valuable paintings should not be kept in churches, nor suspended against heavy walls of masonary, especially in badly-ventilated buildings. Excess of light, particularly the direct rays of the sun, also acts injuriously on paintings.

Pen holder for Weak Hands.

There is no physical defect says Douglass Jerrold great or little, that inventive minds have not attempted, in some way or another, to remedy. Time was when the blind, the deaf, the maimed, sufferred their misfortunes without the slightest alleviation from science or art; but now "we've changed all that." One of the latest inventions of this nature is Holtzapffel's Pen-holder for enfeebled hands, made for the use of those persons who, from age, rheumatism, or other infirmity, are deprived of the free use of the fingers, so that they cannot hold a pen in the customary position. The shaft of this pen-holder is made of strong silver or gold metal; at the bottom is a screw. The socket that receives the pen is joined to the holder at about the angle of forty-five degrees. The purpose of the screw at the bottom of the holder is to adapt the length of the vertical shaft to the protection of the pen. The lower extremity of the shaft is allowed to rest firmly upon the paper, and thereby support the hand. The pen itself is pressed on the paper from its socket, by a feeble spring, so as to assimilate in the closest manner, to the action of the ordinary quill pen. The invention is a kind of pen-holder constructed to give support and guidance to the hand, while writing. The article is adapted to receive a steel or quill pen; and shuts up in compact and elegant shape.

To keep a House Cool all Day.

Open the windows and doors at five o'clock in the morning, keep them open two hours; then close them all—windows, doors and window-shades—and the house will remain cool during the hottest part of the day.

Two pieces of amber may be cemented together by wetting with a solution of potash and pressing the parts together.

THE SCIENTIFIC AMERICAN

This paper, the most popular publication of the kind in the world, is published weekly *At* 128 *Fulton Street, New York, and* 13 *Court Street, Boston,*

BY MUNN & COMPANY.

The principal office being at New York.

The SCIENTIFIC AMERICAN is the Advocate of Industry in all its forms, and as a Journal for Mechanics and Manufacturers, is not equalled by any other publication of the kind in the world

Each number contains from FIVE to SEVEN ORIGINAL MECHANICAL ENGRAVINGS of the most important inventions; a catalogue of AMERICAN PATENTS, as issued from the Patent Office each week; notices of the progress of all new MECHANICAL and SCIENTIFIC inventions; instruction in the various ARTS and TRADES, with ENGRAVINGS; curious PHILOSOPHICAL and CHEMICAL experiments; the latest RAILROAD INTELLIGENCE in EUROPE and AMERICA; all the different MECHANICAL MOVEMENTS, published in a series and ILLUSTRATED with more than A HUNDRED ENGRAVINGS, &c. &c.

The Scientific American has already attained the *largest* circulation of any weekly mechanical journal in the world, and in this country its circulation is not surpassed by *all* the other mechanical papers combined.

☞For terms see inside.

© 1848 SCIENTIFIC AMERICIAN, INC